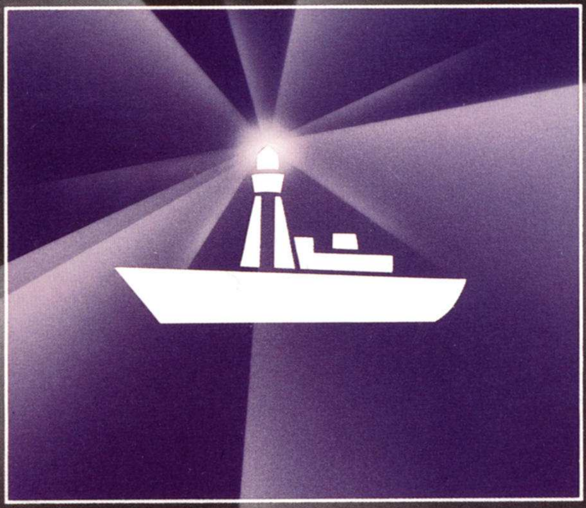

LIGHTSHIP

PILOT
EXECUTIVE SOFTWARE

Learning LightShip™

Version 3.0

EXECUTIVE SOFTWARE
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Introducing LightShip™

Pilot™ LightShip is an object-oriented application development package for creating Executive Information Systems (EIS). LightShip allows you to build an EIS in less time than ever before, without writing any code. This section describes what an EIS is and looks at the components that make up a LightShip application.

LightShip applications can display data from external sources such as dBASE® files, SQL servers, ASCII text files, and any Microsoft® Windows™ compatible application that conforms to standard rules of Windows Dynamic Data Exchange (DDE). DDE is a protocol that allows applications to exchange data on a real-time basis.

What Is an EIS?

An EIS brings managers and executives vital information about their businesses – right to the PCs on their desks. EIS applications are frequently used for performing database queries that display on-screen reports and charts. LightShip enables you to quickly create applications that provide:

- Data display (including spreadsheet data, charts, text, and graphics).
- Open data access with active software links.
- Drill-down information navigation.
- Variance reporting.
- Trend analysis.

Figure 1 shows the top level screen of the LightShip demonstrations. This screen displays icons you can click on to start the demonstrations.

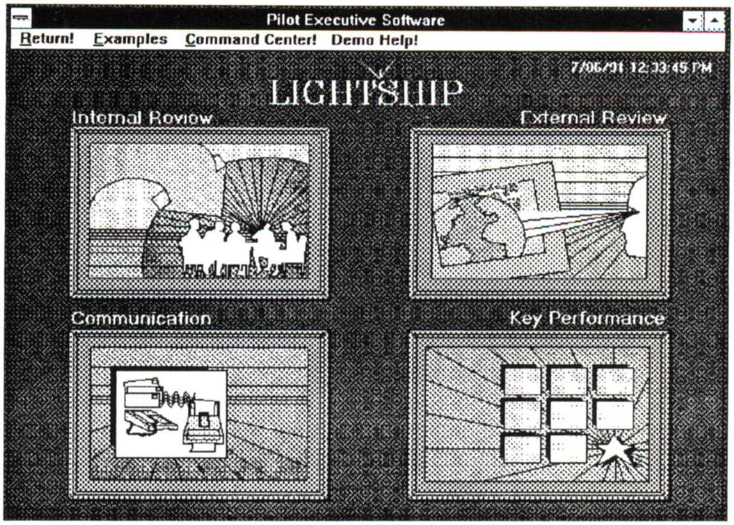
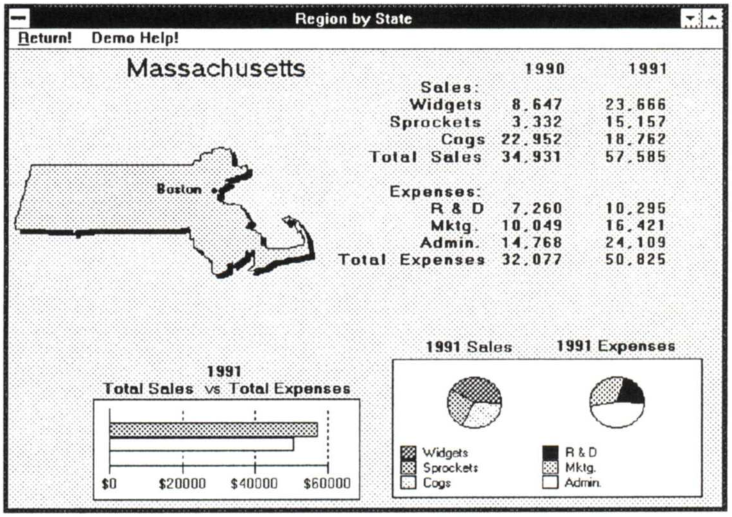


Figure 1 The Top Demonstration Screen

Data Display

LightShip screens allow you to combine text, numbers, charts, and graphics, as illustrated in Figure 2.



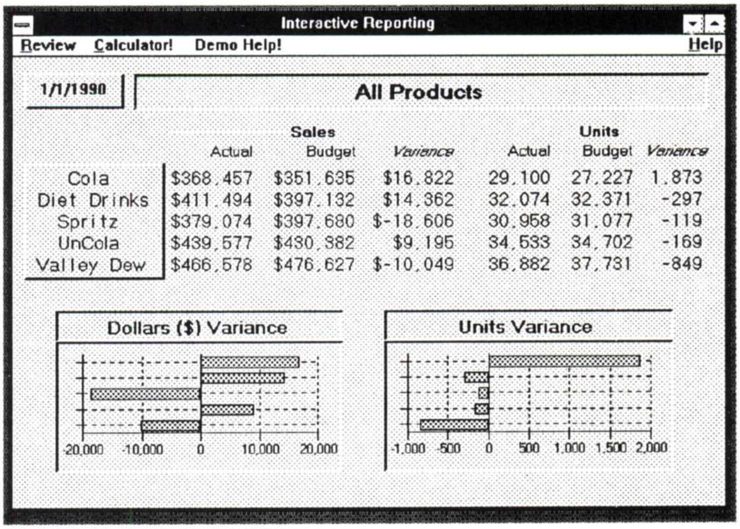
Massachusetts

	1990	1991
Sales:		
Widgets	8,647	23,666
Sprockets	3,332	15,157
Cogs	22,952	18,762
Total Sales	34,931	57,585
Expenses:		
R & D	7,260	10,295
Mktg.	10,049	16,421
Admin.	14,768	24,109
Total Expenses	32,077	50,825

Figure 2 Data Display

Open Data Access

LightShip is designed to work with other programs that provide data. You can display data from different sources on one screen, which updates as soon as the source data changes. Figure 3 shows an application that displays data from a dBASE file, using LightShip Lens™.



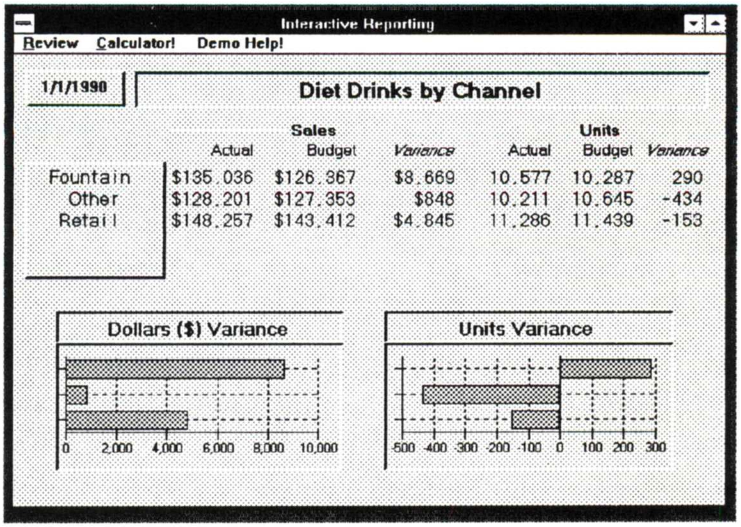
All Products

	Sales			Units		
	Actual	Budget	*Variance*	Actual	Budget	*Variance*
Cola	$368,457	$351,635	$16,822	29,100	27,227	1,873
Diet Drinks	$411,494	$397,132	$14,362	32,074	32,371	-297
Spritz	$379,074	$397,680	$-18,606	30,958	31,077	-119
UnCola	$439,577	$430,382	$9,195	34,533	34,702	-169
Valley Dew	$466,578	$476,627	$-10,049	36,882	37,731	-849

Figure 3 Open Data Access

Drill-Down Review

Drill-down review allows end-users to navigate through the data; to display more information about an item, just click on it. For example, Figure 4 shows the screen that appears when you click on the Diet Drinks item shown in Figure 3.



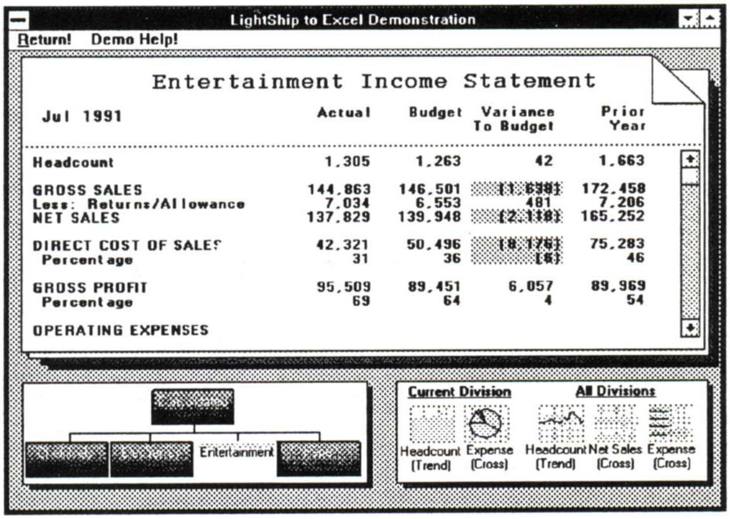
Diet Drinks by Channel

	Sales			Units		
	Actual	Budget	*Variance*	Actual	Budget	*Variance*
Fountain	$135,036	$126,367	$8,669	10,577	10,287	290
Other	$128,201	$127,353	$848	10,211	10,645	-434
Retail	$148,257	$143,412	$4,845	11,286	11,439	-153

Figure 4 Drill-Down Review

Variance Reporting

Variance reports display numbers that are greater or less than projections. With a LightShip application, management can define key performance indicators and windows of acceptable results. LightShip then highlights indicators that are under or over plan, as shown in Figure 5.



Entertainment Income Statement

Jul 1991	Actual	Budget	Variance To Budget	Prior Year
Headcount	1,305	1,263	42	1,663
GROSS SALES	144,863	146,501	(1,638)	172,458
Less: Returns/Allowance	7,034	6,553	481	7,206
NET SALES	137,829	139,948	(2,118)	165,252
DIRECT COST OF SALES	42,321	50,496	(8,175)	75,283
Percentage	31	36	(5)	46
GROSS PROFIT	95,509	89,451	6,057	89,969
Percentage	69	64	4	54
OPERATING EXPENSES				

Figure 5 Variance Reports

Trend Analysis

You can easily chart any data displayed on the screen, allowing end-users to quickly see trends and relationships in their data. Data and charts are dynamically linked so that charts are automatically updated.

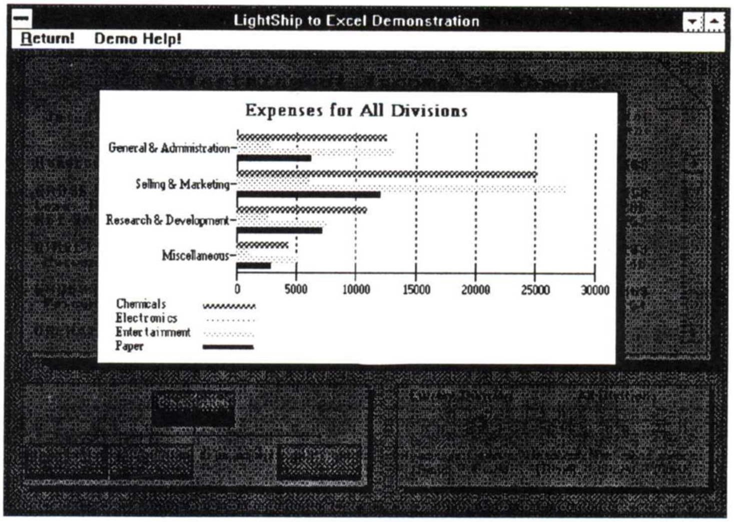


Figure 6 Trend Analysis

About This Tutorial

This tutorial shows you how to build a simple application. After installing LightShip, use it to get a quick overview of the application building process and see how the different components of LightShip work together. This tutorial has seven exercises, which show you how to:

- Create a screen background.
- Display data from text files.
- Display text and draw objects.
- Calculate variances.
- Display text files dynamically.
- Create charts.
- Go to another screen and pass parameters to it.

This tutorial assumes you are familiar with Microsoft Windows. Before starting, look over Chapter 1 in the *LightShip User's Guide*, which describes documentation conventions, how to start LightShip, how to use the control menu, and how to manipulate the LightShip window.

The Tutorial Files

The text and image files you need to build the tutorial application are in the \LS\TUTORIAL directory. These directories were created when you installed LightShip. The files are named as follows:

1. CONSOL3.TXT
2. CONSOL3A.TXT
3. CHEM3.TXT
4. CHEM3A.TXT
5. ELECT3.TXT
6. ELECT3A.TXT
7. PAPER3.TXT
8. PAPER3A.TXT
9. HEADER.PCX
10. SCREEN1.LSF
11. SCREEN2.LSF

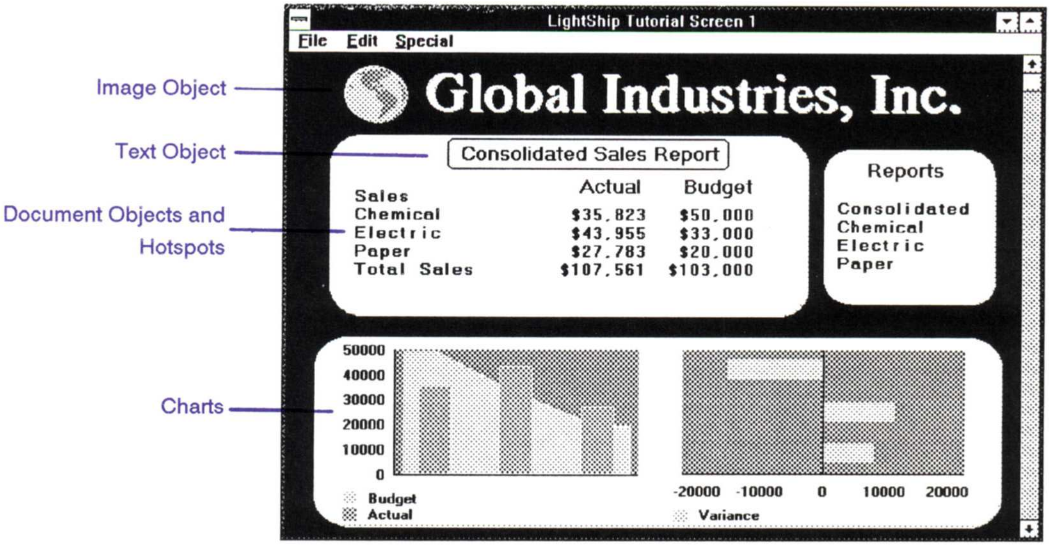
Note that the LightShip 2.0 tutorial files are also in this directory. You can disregard these files.

The Tutorial Screens

A LightShip application can include many screens, each of which may display reports, charts, and graphic images. You create and arrange *objects* on each screen to display data and to allow end-users to perform actions, such as displaying a chart, highlighting variances, or going to another screen. Figures 7 and 8 show the screens you will build in this tutorial. The names of the objects that make up the screen are displayed in the margin.

To shorten the time it takes to finish the exercises, the tutorial provides one completed screen and one template for a screen you will build. The tutorial suggests the colors to use as you add each new object. These colors were developed by a graphic artist and are intended as recommendations. You can, of course, choose any colors or fonts you wish.

Figure 7 shows the screen you will build from the template. This screen displays actual and budget sales figures for a company.



Sales	Actual	Budget
Chemical	$35,823	$50,000
Electric	$43,955	$33,000
Paper	$27,783	$20,000
Total Sales	$107,561	$103,000

Figure 7 The First Screen

Figure 8 shows the second tutorial screen, which is provided as a completed screen. This chart graphs five years worth of sales and expense numbers for the report or division shown on the first screen.

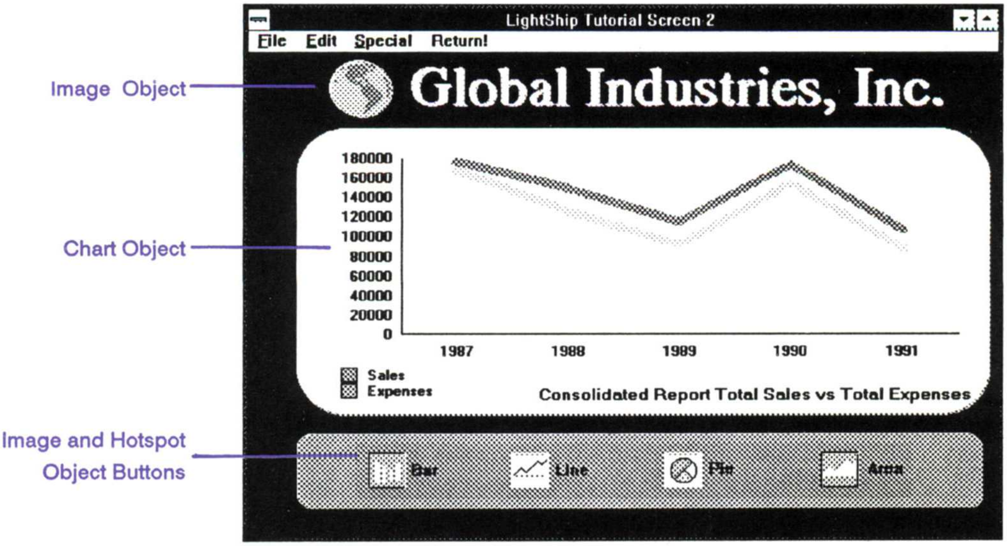


Figure 8 The Second Screen

The buttons along the lower screen are created with draw objects that have text objects and invisible hotspots placed over them. *Hotspots* define the actions that the button carries out. Each hotspot on this screen changes the chart type when you click on it.

* * *

Exercise 1: Creating a Screen Background

The application screen you will build in this exercise displays sales reports for different divisions of a company.

Starting LightShip

If you have a LightShip icon, you can start LightShip in Windows by double-clicking on the icon. Otherwise:

1. Start the Windows File Manager.
2. Select the LS drive and directory.
3. Double-click on the file LS.EXE.

   LightShip opens with a new screen in the window, shown in Figure 1-1.

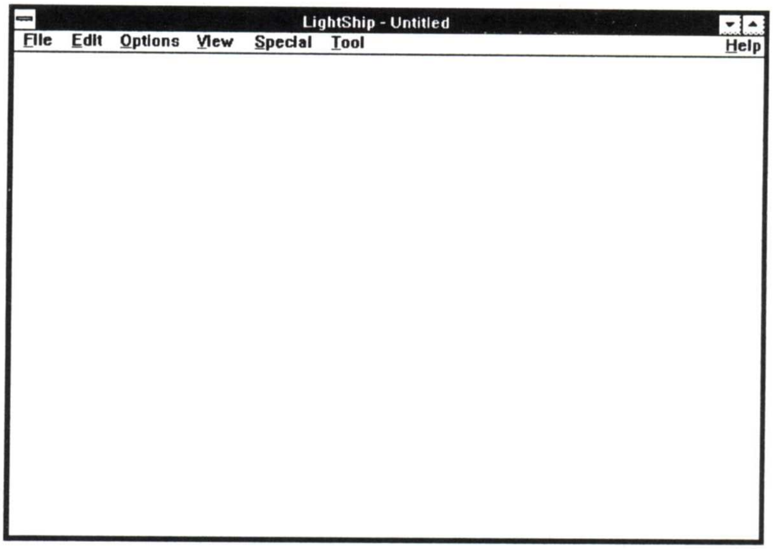


Figure 1-1 The LightShip Window

LightShip has three levels: Browse, Capture, and Author. You use the Browse and Capture levels for testing and running applications. You are at the Author level now, which you use for building applications.

Opening the First Screen

You will start building the first screen from an existing file. It contains several draw objects to use as frames for data you will display. We saved the draw objects as one Clipboard image to make the screen open faster.

☐ **To open the first screen:**

1. Choose File Open.

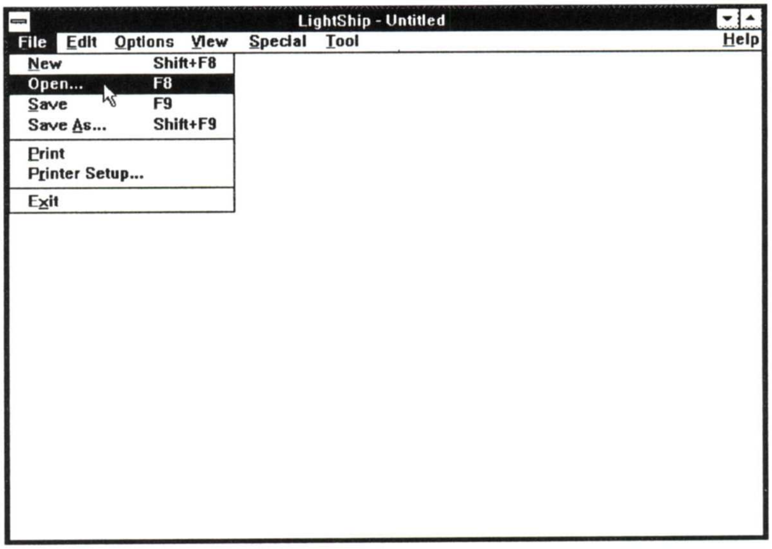


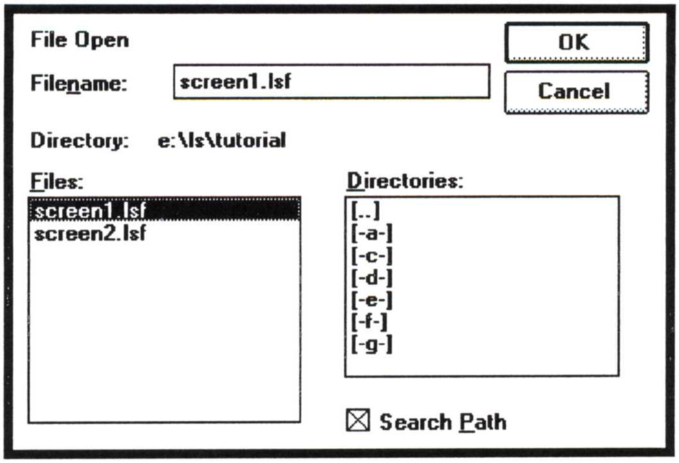
Figure 1-2 The File Menu

The dialog box shown in Figure 1-3 appears.

2. Select LS\TUTORIAL from the Directories list box.

The Directory item displays the current drive and directory.

3. Select SCREEN1.LSF from the Files list box.



Filename: screen1.lsf

Directory: e:\ls\tutorial

Files:
screen1.lsf
screen2.lsf

Directories:
[..]
[-a-]
[-c-]
[-d-]
[-e-]
[-f-]
[-g-]

☒ Search Path

Figure 1-3 Selecting a File to Opening

4. Click the Search Path check box to tell LightShip to use the file search path.

   When you open a screen, if Search Path is on, LightShip looks for the file in the current working directory first, and then in a search path you have defined, such as your DOS Path. If Search Path is off, LightShip searches only the directory specified on the dialog box.

5. Choose OK.

   The file opens, as shown in Figure 1-4.

6. (Optional) To enlarge the screen, click the Maximize box in the upper-right corner of the window.

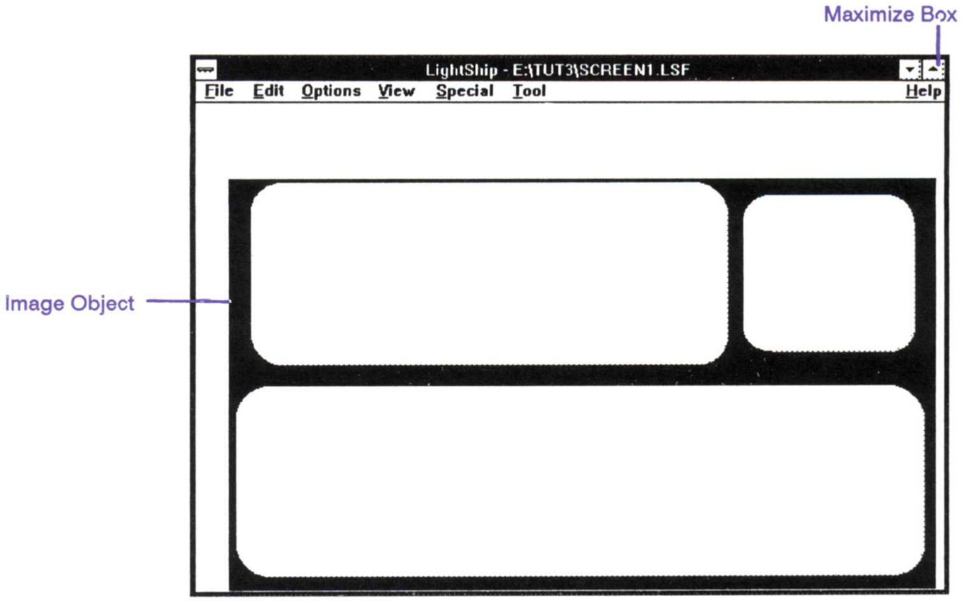


Figure 1-4 The First Tutorial Screen

Before You Begin

LightShip objects are ordered in relation to each other; you can think of them as being stacked, similar to a deck of cards. By default, each new object you create is in front of the one you created previously. LightShip also has an option that allows you to create each new object behind all other objects.

This tutorial assumes you are using the default method. Before you begin creating objects, check and make sure that Special Create in Back is not on, because this will affect the order in which objects are created during the building of the tutorial application.

1. Choose the Special menu, as shown in Figure 1-5.

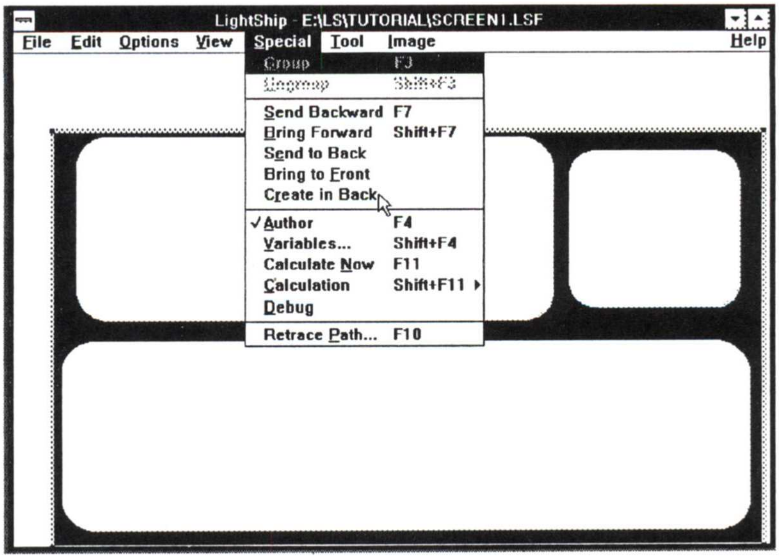


Figure 1-5 The Special Menu

2. Make sure Create In Back does not have a check mark next to it.

   If it does, choose it to turn it off.

Creating an Image Object

In this section, you will import a PCX file that contains the header for the screen. PCX is a bitmap file format. First you need to create an image object in which to display the image.

☐ **To create an image object:**

1. Choose Tool Image.

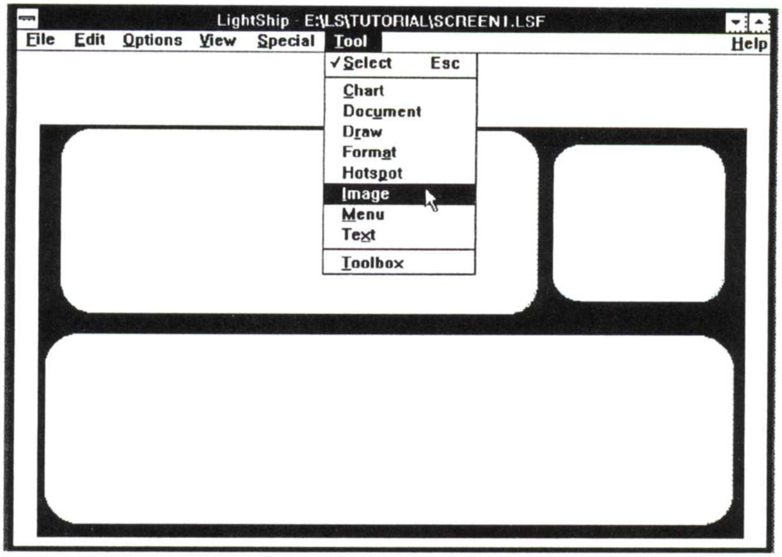


Figure 1-6 The Tool Menu

The cursor changes to a crosshair, indicating that you are in Create mode. Notice that the Image menu has appeared on the menu bar. Whenever you create or select an object, the menu for that object appears on the menu bar. This menu allows you to define attributes for the selected object.

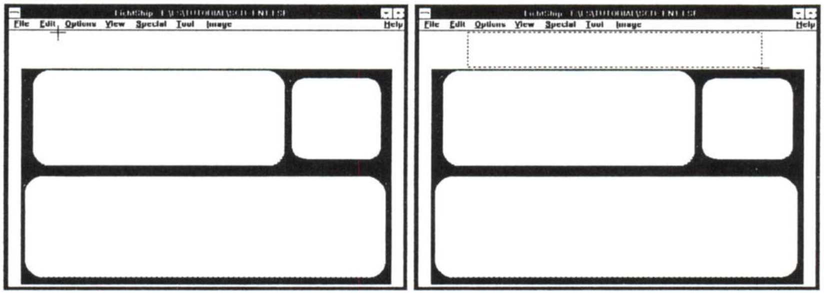


Figure 1-7 Creating an Image Object

2. Hold down the left mouse button at the upper-left corner of the screen, as shown on the left in Figure 1-7.

Then drag the mouse from left to right, down and across the screen (as shown on the right in Figure 1-7) and release the mouse.

3. Choose Image Source PCX File.

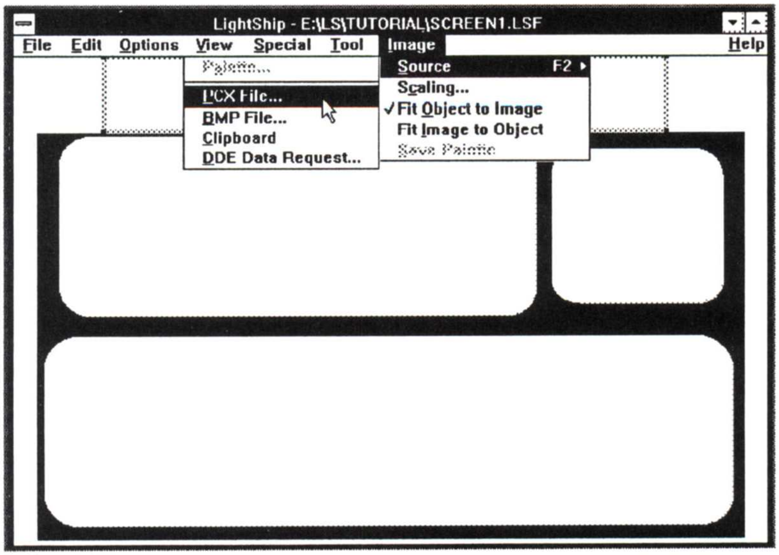


Figure 1-8 The Image Source Menu

The dialog box shown in Figure 1-9 appears.

4. Select the file HEADER.PCX in the Files list box.

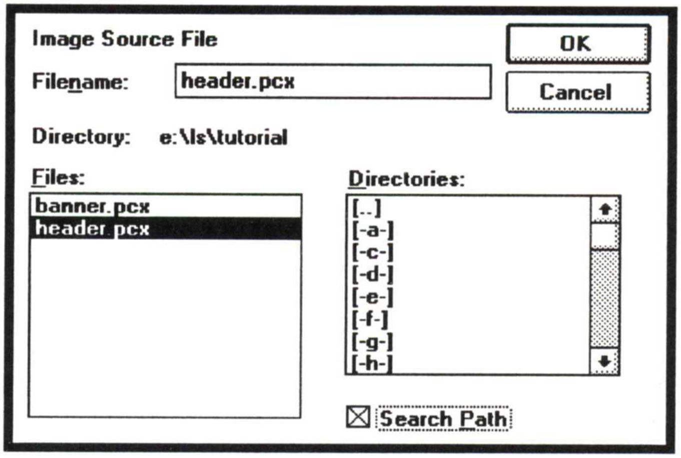


Image Source File

Filename: header.pcx

Directory: e:\ls\tutorial

Files:

banner.pcx
header.pcx

Directories:

[..]
[-a-]
[-c-]
[-d-]
[-e-]
[-f-]
[-g-]
[-h-]

☒ Search Path

Figure 1-9 Selecting the Image File

5. Choose OK.

   The image appears on the screen.

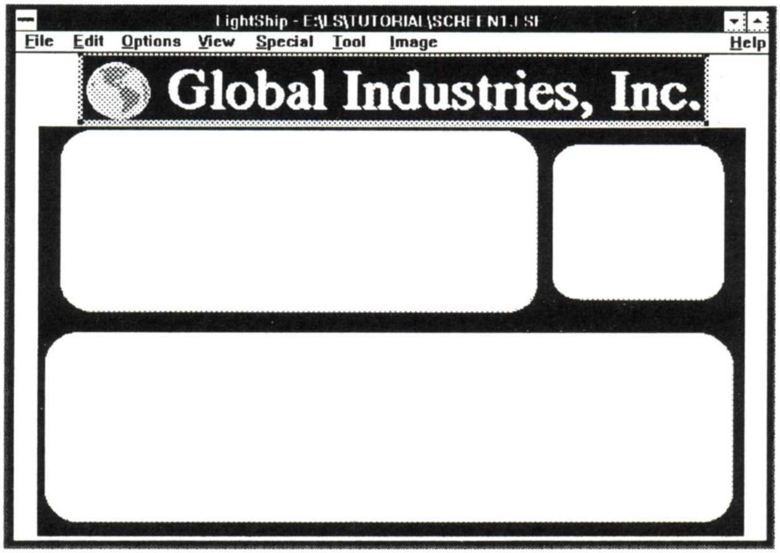
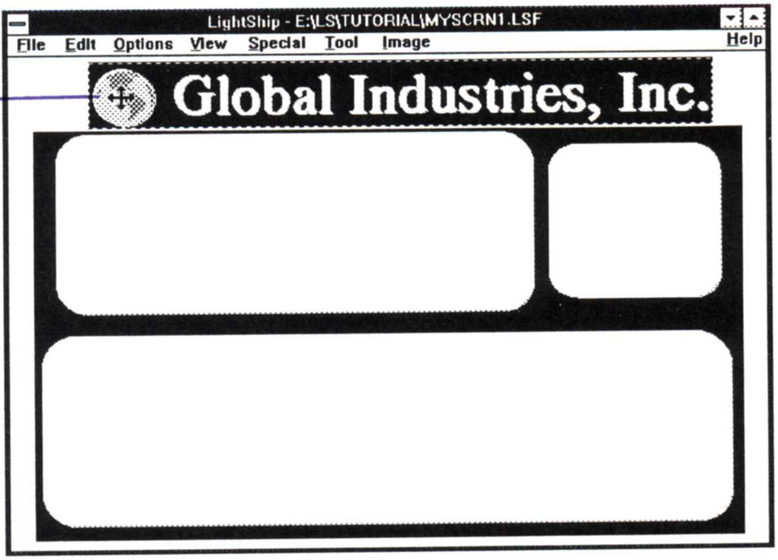


Figure 1-10 The Image Object

You might need to reposition it slightly.

☐ **To move the image object:**

Point to the object and hold down the left mouse button. When the cursor changes to a four-headed arrow, drag the object to its new position. When you release the mouse, the cursor changes back to the pointer.



Four-headed Arrow

Figure 1-11 Moving the Image Object

☞ Note that when an object is selected, it is enclosed in a rectangle. To select an object, click on it. To deselect it, click elsewhere on the screen.

Coloring the Screen

☐ **Now select a background color for your screen:**

1. Choose Options Screen Color.

   The dialog box shown in Figure 1-12 appears.

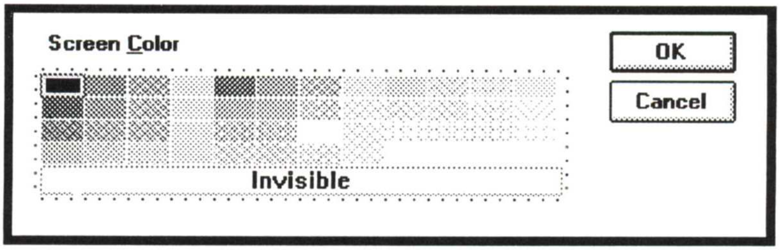


Figure 1-12 Coloring the Screen

2. Select the black square in the top-left corner.

3. Choose OK.

Adding a Window Caption

You can add a window caption that will display in the title bar of the application window when you view the screen at the Browse level.

❑ **To add a window caption:**

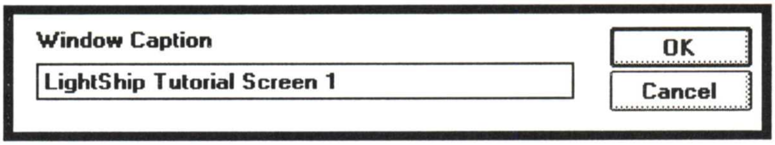
1. Choose Options Window Caption.

   The dialog box shown in Figure 1-13 appears.

2. Type:

   `LightShip Tutorial Screen 1`

   The window caption will not appear in the title bar until you enter the Browse level in Exercise 5.


Window Caption

LightShip Tutorial Screen 1

Figure 1-13 Adding a Window Caption

3. Choose OK.

Saving the Window Position and Size

You can save the window position and size so that your screen always displays as it was last saved to the file. To do this, turn on Options Save Window Position for the top screen, but not for subsequent screens. The called screens open with the same window position and size, which makes screen repainting faster and more visually pleasing.

☐ **To save the window position and size:**

Choose Options Save Window Position.

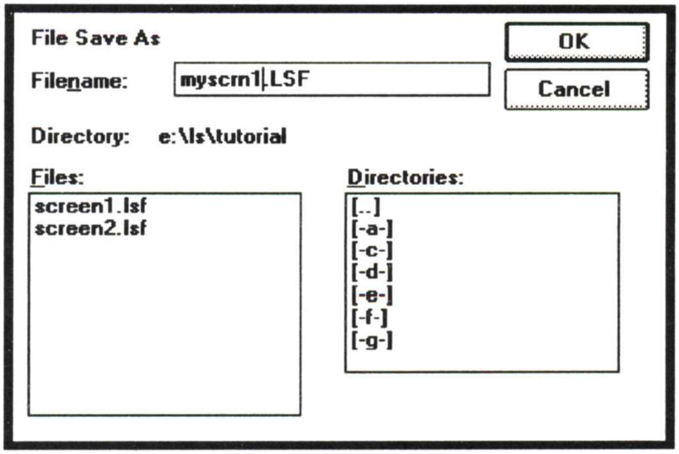
Saving the Screen to a File

Now you should save your screen. If someone else might want to use SCREEN1.LSF as a template for the tutorial, save it with a new name.

☐ **To save the screen to a file:**

1. Choose File Save As.

   A dialog box appears and prompts you for a filename.



Filename: myscrn1.LSF

Directory: e:\ls\tutorial

screen1.lsf
screen2.lsf

[..]
[-a-]
[-c-]
[-d-]
[-e-]
[-f-]
[-g-]

Figure 1-14 Saving the Screen

2. Make sure the \LS\TUTORIAL directory is selected.
3. Type a filename other than SCREEN1.LSF, such as:

   `myscrn1.lsf`

4. Choose OK.

   The screen is saved in the selected drive and directory.

This is the end of Exercise 1. Go on to Exercise 2 to create document objects and variables.

☞ **Note**

Now that you have saved the file, you can close it, leave LightShip, and come back to the file without losing your work.

☐ **To exit from LightShip:**

Choose File Exit.

* * *

Exercise 2: Displaying Data

You display data in LightShip by creating document objects. A document object can display data from an external source, such as a database or a text file, or you can type directly into the object.

In this exercise, you will create two document objects. One will display a text file and the other will display text that you type in from the keyboard.

You will also define two *variables*. A variable is a container that stores value(s). You can display the values contained in a variable by referencing it, as you will see in this exercise.

Setting Default Colors and Fonts

In this section, you will select colors and fonts for the document objects before you create them. When you specify attributes for an object before creating an object of that type, the attributes become the defaults for that screen. Because all the document objects on this screen will have the same colors and fonts, this saves you from having to select them for each document object you create.

Specifying Colors

☐ **To specify the colors of a document object:**

1. Choose Tool Document.

   The cursor changes to a crosshair and the Document menu appears on the menu bar.

2. Choose Document Color or press the F5 key.

   The dialog box shown in Figure 2-1 appears.

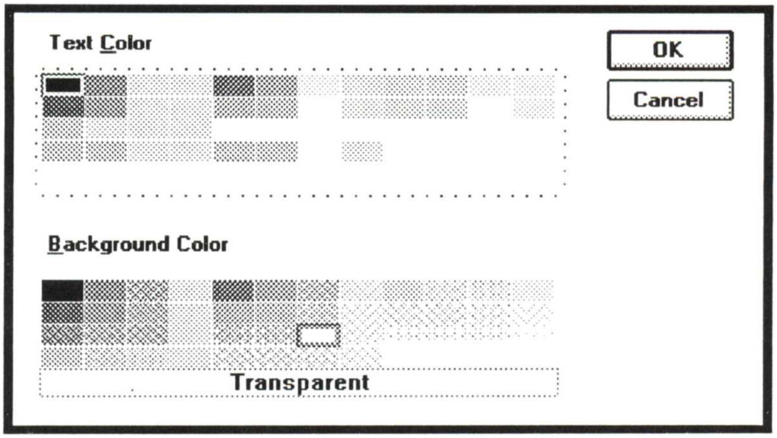


Figure 2-1 Selecting Document Object Colors

3. Select the dark blue-purple next to the black square in the upper-left corner for the text color.

4. Select light gray for the background color.

   Selecting a background color that is not transparent is preferable for document objects because the screen repaints faster when you scroll.

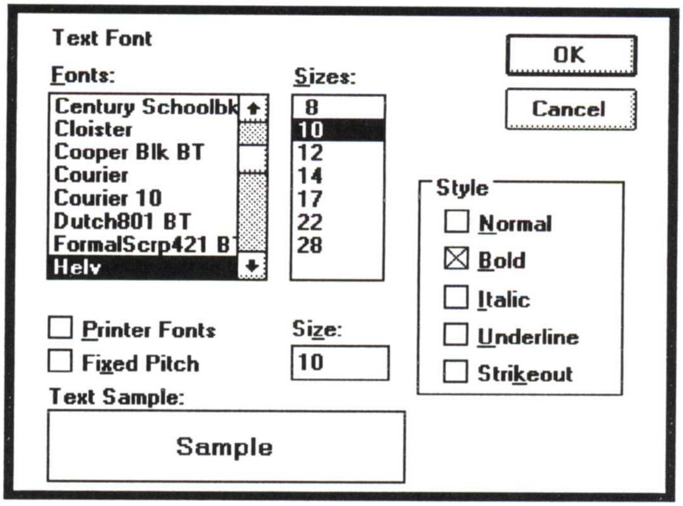
5. Choose OK.

Specifying the Font

☐ **To specify the document's font:**

1. Choose Document Font or press the F6 key.

   The dialog box shown in Figure 2-2 appears.



Text Font

Fonts:
Century Schoolbk
Cloister
Cooper Blk BT
Courier
Courier 10
Dutch801 BT
FormalScrp421 BT
Helv

Sizes:
8
10
12
14
17
22
28

☐ Printer Fonts
☐ Fixed Pitch

Size: 10

Style
☐ Normal
☒ Bold
☐ Italic
☐ Underline
☐ Strikeout

Text Sample:
Sample

Figure 2-2 Selecting a Font

When you choose fonts for document objects, the Fixed Pitch button is on by default. This causes only monospaced fonts to be listed.

2. Click the Fixed Pitch check box to turn it off.

   The list box displays all fonts.

3. Scroll down and select Helv from the Fonts list box.
4. Select 10 from the Sizes list box.
5. Select Bold in the Style list.
6. Choose OK.

Creating a Text File Document Object

☐ **To create the first document object:**

1. Make sure Tool Document is still selected.

2. Drag the mouse from left to right across the screen to create the document object, as shown in Figure 2-3.

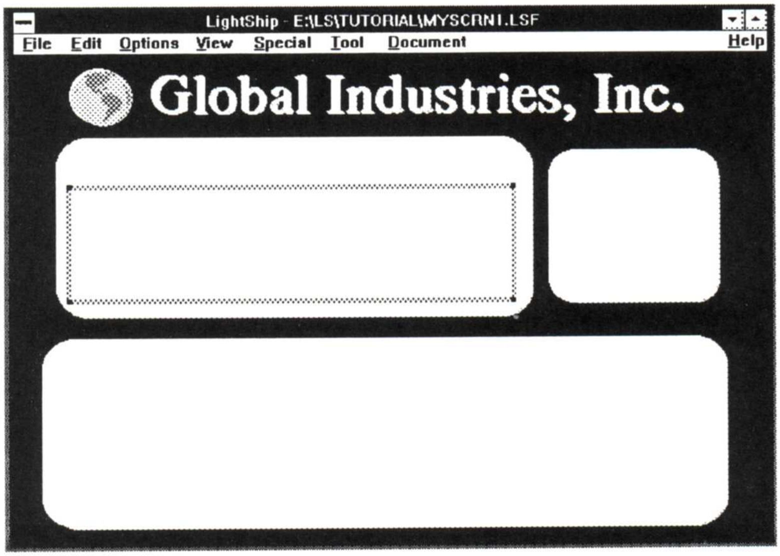


Figure 2-3 Creating the First Document Object

3. Choose Document Source Text File.

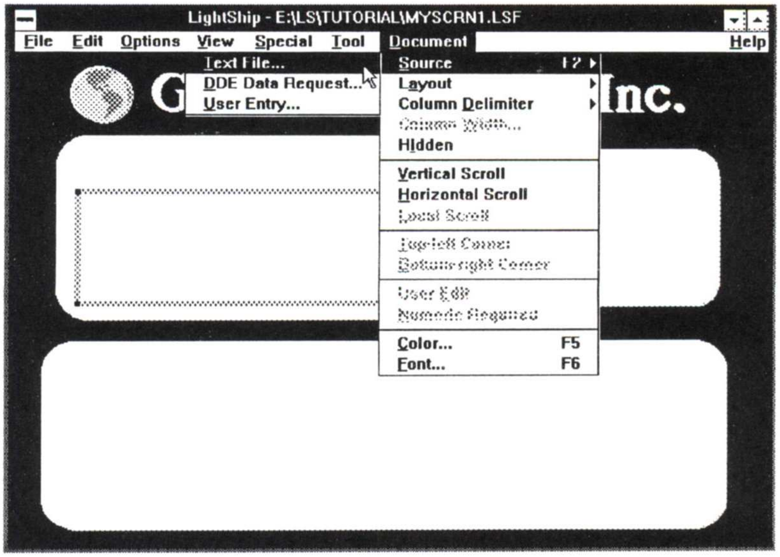


Figure 2-4 Choosing a Data Source

The Document Text File dialog box appears.

4. Make sure the LS\TUTORIAL directory is selected.

5. In the Filename text box, type:

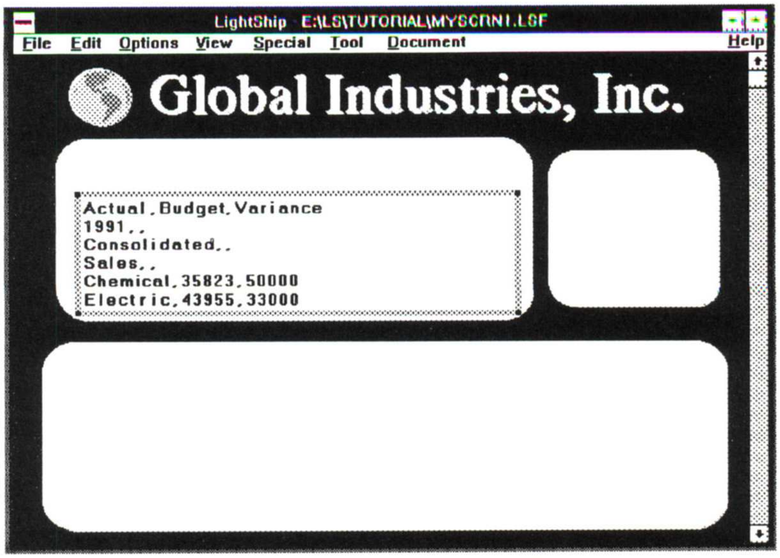
   `*.txt`

6. Press the ENTER key to list all the files with the extension .TXT in the LS\TUTORIAL directory.

7. Make sure the Search Path check box is turned on.

8. Double-click on the file CONSOL3.TXT to select it.

   The file appears in the document object, as shown in Figure 2-5.



```
Actual,Budget,Variance
1991,,
Consolidated,,
Sales,,
Chemical,35823,50000
Electric,43955,33000
```

Figure 2-5 Displaying a Text File

Defining Column Widths

You can specify column widths by identifying a character in the source data that marks the division between columns (called the *column delimiter*). The tutorial files use a comma as a column delimiter.

☐ **To specify column delimiters and width:**

1. Choose Document Column Delimiter.

   The Column Delimiter menu appears.

2. Choose Comma.

   This causes LightShip to begin a new column whenever it encounters a comma in the document object. The default column width is 10, which is not wide enough for the first column.

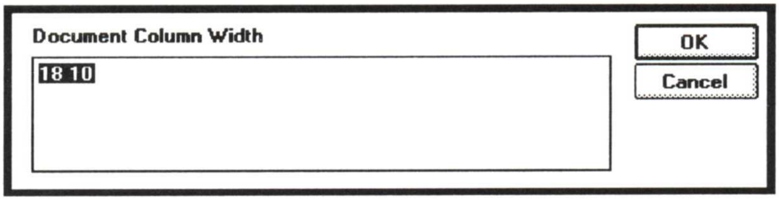
3. Choose Document Column Width.

   The dialog box shown in Figure 2-6 appears.

4. Type:

   `18 10`

   This defines the first column as 18 characters wide and every subsequent column as 10 characters wide.



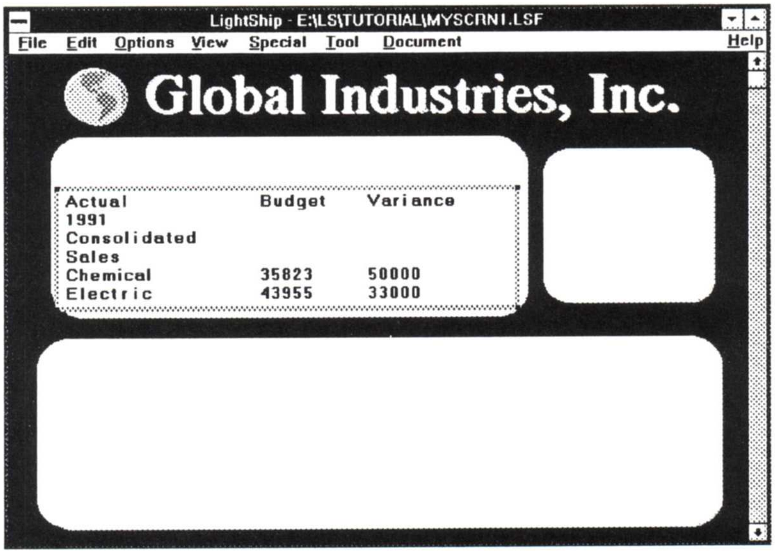
Document Column Width

18 10

Figure 2-6 Defining Column Widths

5. Choose OK.

   The columns will be aligned as shown in Figure 2-7.



```
Actual            Budget    Variance
1991
Consolidated
Sales
Chemical          35823     50000
Electric          43955     33000
```

Figure 2-7 The Document With Columns Aligned

Scrolling a Document Object

Scrolling at the Author Level

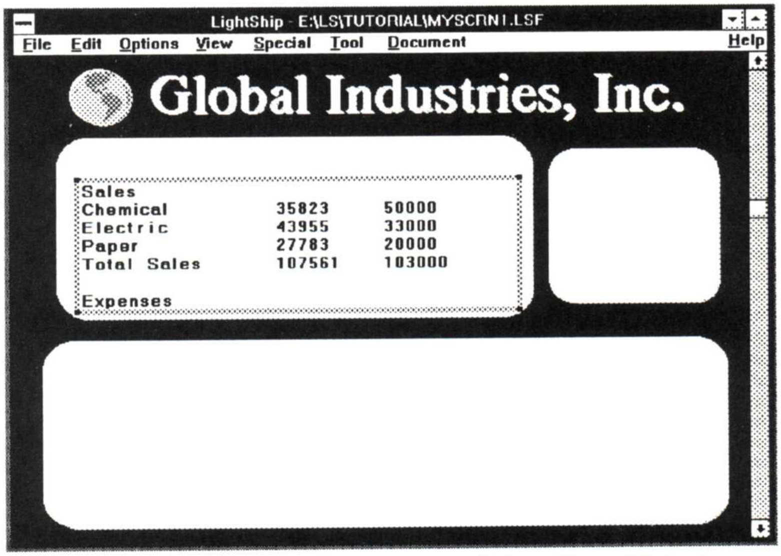
When you select a document object at the Author level, scroll bars appear on the LightShip window if the source has more text than can show in the document object.

Scrolling at the Browse Level

You will set this document object to scroll vertically one page at a time at the Browse level. (A page is defined by the number of lines displayed in the document object.)

☐ **To define scrolling for the document object:**

1. Click on the scroll arrow in the lower-right corner of the window until the word "Sales" is in the upper-left corner of the document.



```
Sales
Chemical          35823     50000
Electric          43955     33000
Paper             27783     20000
Total Sales       107561    103000

Expenses
```

Figure 2-8 Scrolling the Document Object Up to "Sales"

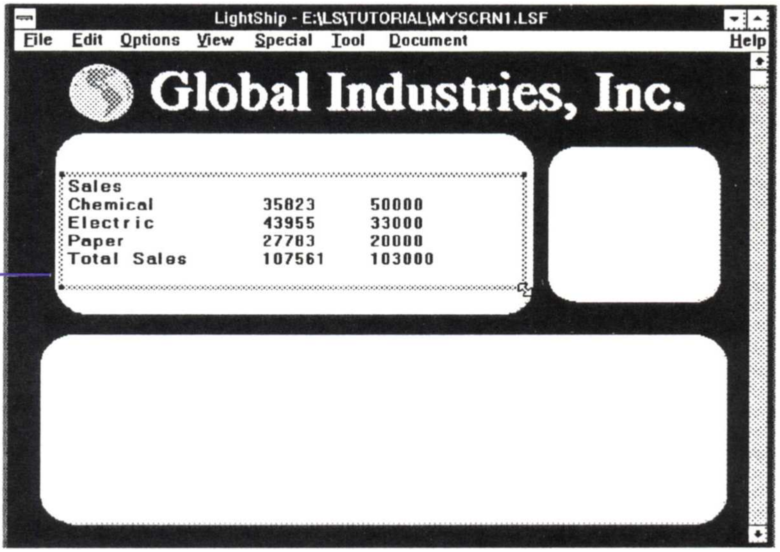
2. Resize the document object so that there is one blank line after the "Total Sales" line, as shown in Figure 2-9.

In order for the scrolling to work correctly, the document object must be sized and positioned correctly.

☐ **To resize the document:**

Place the mouse on the lower-right corner of the document. The cursor changes to the two-headed arrow, as shown in Figure 2-9. Drag the document object until it is the size you want.

You may also need to reposition the document object. Your screen should resemble the one shown in Figure 2-9.



```
Sales
Chemical            35823      50000
Electric            43955      33000
Paper               27783      20000
Total  Sales        107561     103000
```

There Should Be One Blank Line After "Total Sales"

Figure 2-9 Anchoring the Top-left Corner

3. Choose Document Vertical Scroll.

   This option adds vertical scroll bars to the window at the Browse level if the document text is larger than the document object.

4. Choose Document Top-left Corner.

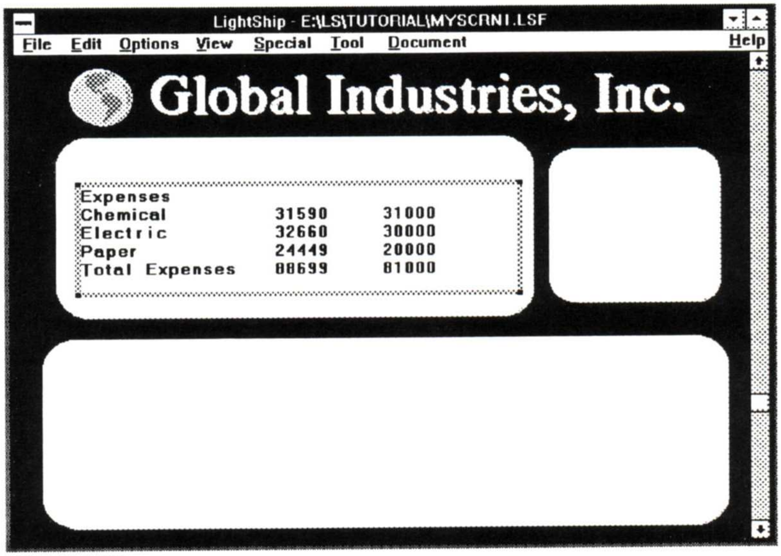
This sets the top-left corner so that you cannot scroll above or to the left of the position now showing at the top of the document object.

5. Choose Options Scroll By Page.

   This confines scrolling to one page at a time.

6. To scroll down, press the PAGEDOWN or the PGDN key one time.

   The document should appear as shown in Figure 2-10.



Expenses		
Chemical	31590	31000
Electric	32660	30000
Paper	24449	20000
Total Expenses	88699	81000

Figure 2-10 The Document Object

7. Choose Document Bottom-right Corner.

   This sets the bottom-right corner so that you cannot scroll below or to the right of the position now showing at the bottom of the document object.

8. Scroll back up to the first page by pressing the PAGEUP or PGUP key.

☞ **Important**

It is important that the document scrolls exactly as shown in Figures 2-9 and 2-10 before going to the rest of the application. If it does not scroll correctly the first time, turn off all the scroll options that you set and start again at step 1 of this section.

Formatting Numbers

In this section, you will format the numbers in the document object that you just created. To do this you must create a *format object*. The document object affected by the format object is called the *destination*.

Format objects are not normally displayed. That is, you cannot see them unless they are selected.

Displaying Format Objects

☐ **To make a format object visible:**

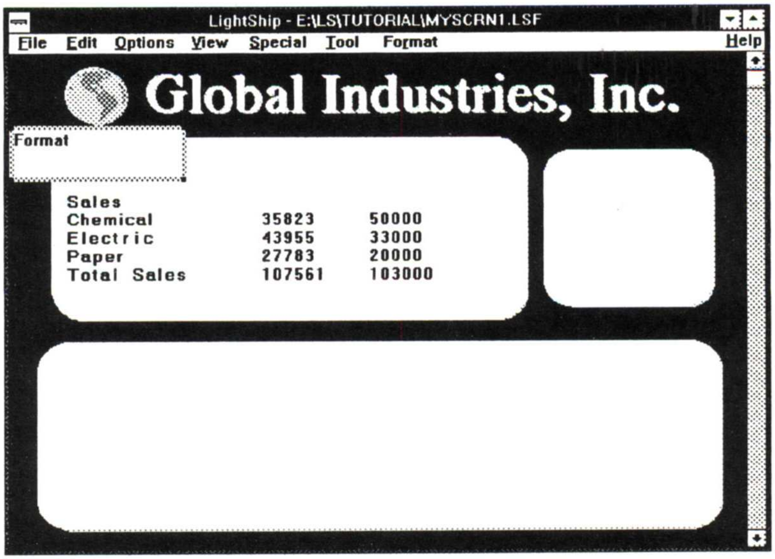
Choose View Show Hidden Objects.

The word "Format" will appear on the format object when you create it.

Creating a Format Object

☐ **To create the format object:**

1. Choose Tool Format.
2. Drag the mouse to create the format object as shown in Figure 2-11.

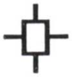

LightShip - E:\LS\TUTORIAL\MYSCRN1.LSF
File Edit Options View Special Tool Format Help
Global Industries, Inc.
Format

Sales		
Chemical	35823	50000
Electric	43955	33000
Paper	27783	20000
Total Sales	107561	103000

Figure 2-11 Creating a Format Object

3. Choose Format Destination.

   The Point mode screen appears, where you can select the data to format. The cursor changes to the one shown below:



☐ **To select the data:**

1. Drag the mouse over the numbers in the two columns, as shown in Figure 2-12.

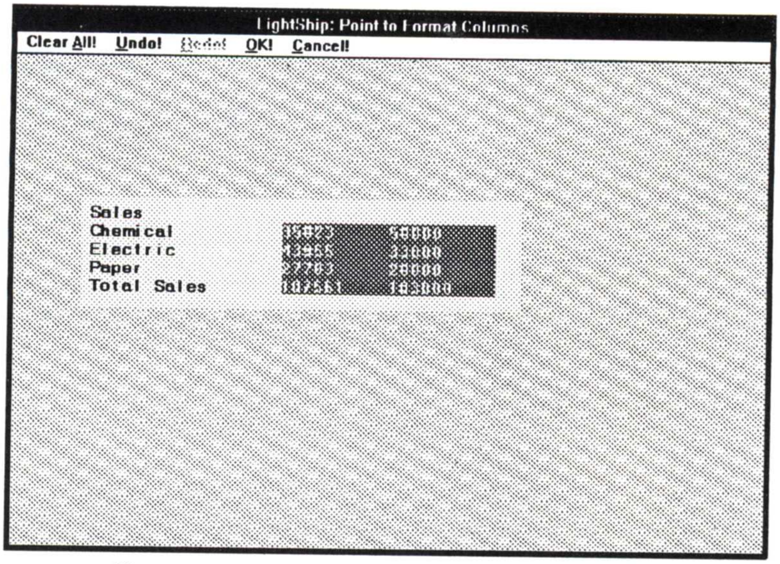
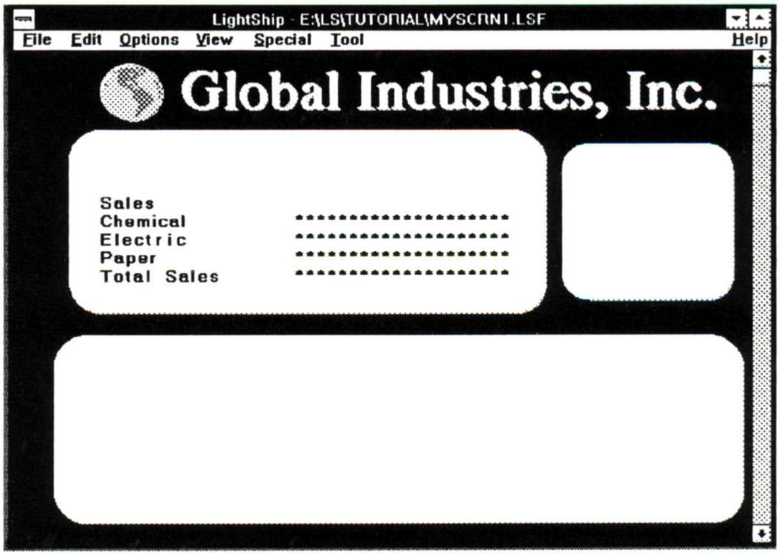


Figure 2-12 Selecting Data in Point Mode

- If you make a mistake, click Undo! or Clear All! from the Point mode menu bar.
- Undo! deselects the last item you selected. You can click on Undo! multiple times and it will deselect highlighted items in the order that you selected them (from the last selected to the first selected).
- Redo! reselects the items that you deselected with Undo! in the order that you selected them (from first to last).
- Clear All! deselects all the highlighted columns.

2. When you are finished, choose OK!.

   Depending on how numeric formatting is set up in the Windows Control Panel, you may see asterisks (*) in the document object instead of numbers. Asterisks mean there is not enough space to display the numbers.



Sales
Chemical ********************
Electric ********************
Paper ********************
Total Sales ********************

Figure 2-13 Formatting the Document Object

You can correct this by changing the Decimal Digits setting on the Numeric Format dialog box. This setting defines how many decimal places will be displayed.

Formatting Numbers

☐ **To open the Numeric Format dialog box:**

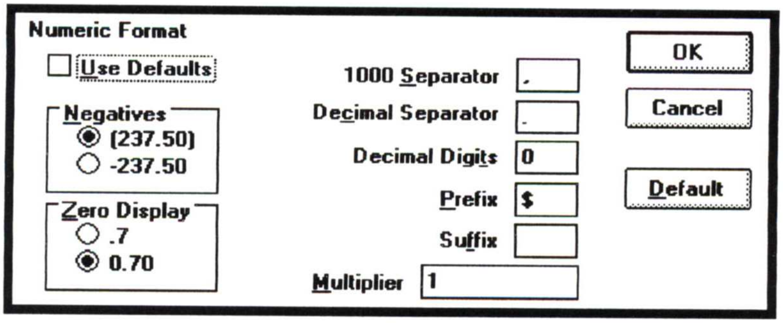
1. Choose Format Numeric Format or press F2.

   The dialog box shown in Figure 2-14 appears.

2. In the Decimal Digits text box, type:

   0

   if it is a number other than 0.



Numeric Format

☐ Use Defaults

Negatives
● (237.50)
○ -237.50

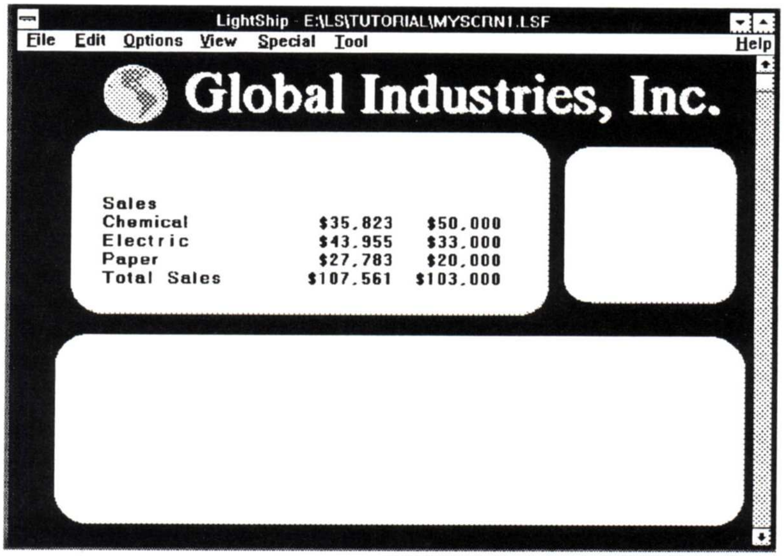
Zero Display
○ .7
● 0.70

1000 Separator: ,
Decimal Separator: .
Decimal Digits: 0
Prefix: $
Suffix:
Multiplier: 1

Figure 2-14 Formatting Numbers

3. Choose OK.

   The document object will be formatted, as shown in Figure 2-15.



```
Sales
Chemical            $35,823   $50,000
Electric            $43,955   $33,000
Paper               $27,783   $20,000
Total Sales        $107,561  $103,000
```

Figure 2-15 The Formatted Document Object

Hiding the Format Object

❑ **To hide the format object:**

Choose View Show Hidden Objects again.

Defining Variables

Before creating the next document object, you'll define a couple of local variables. A variable is a container that stores one or more values, for example:

report = Consolidated

Using variables allows you a great deal of flexibility. For example, if *report* is a variable name, the value might be Consolidated, Chemical, Electric, or Paper. You can then refer to the variable and LightShip substitutes the name with the current value.

Local variables are known only to the screen they are created on and are saved with the screen. The last value of a variable saved with the screen will be the initial value of the variable when the screen opens.

The first variable you will create will be called *repnames*. It will contain four report names that will appear in a document object you'll create later in this exercise. The second variable will be called *report* and will contain the current report name.

☐ **To define the variables:**

1. Choose Special Variables.

   The dialog box shown in Figure 2-16 appears. The Variables dialog box allows you to define and delete variables and it displays the current value of all variables.

2. If desired, click the Globals check box to turn off the display of global variables.

   When this option is off, you can only create and display local variables.

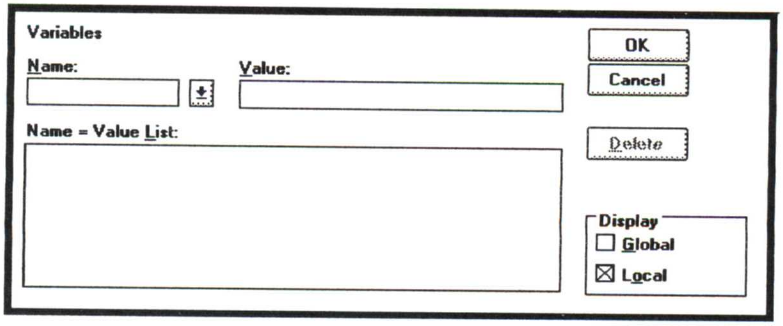


Figure 2-16 Displaying Variables

3. Click in the Name text box and type:

   `repnames`

4. Press TAB to move to the Value text box on the right.

5. Type:

   `Consolidated`

   and press CTRL+ENTER to create a new row. The word disappears, but don't worry, it has only moved to the left.

Note Do not press ENTER or you will close the dialog box. If you did press ENTER, choose Special Variables again, select *repnames=Consolidated*, and click in the Value text box. Then press the right arrow key to return to where you left off and press CTRL+ENTER.

6. Type:

   `Chemical`

   and press CTRL+ENTER.

7. Type:

   `Electric`

   and press CTRL+ENTER.

8. Type:

   `Paper`

   and press SHIFT+TAB to return to the Name text box.

   The two bars (||) between the values indicate a new row. A single bar (|) indicates a new column.

Initializing Variables

In this section, you will initialize a variable called *report* to the Consolidated report.

☐ **To create the second variable:**

1. In the Name text box, type:

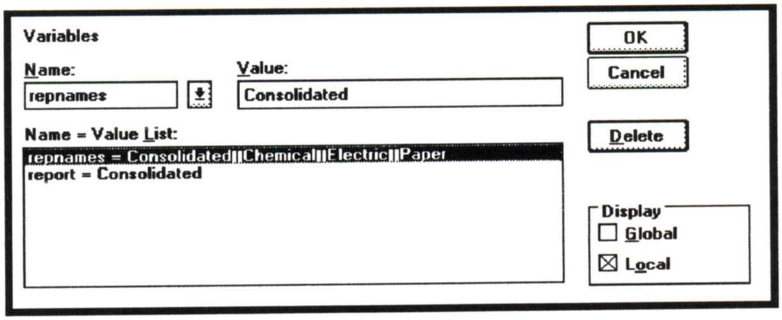
   `report`

2. Press TAB to move to the text box on the right.

3. Type:

   `Consolidated`

   and click in the list box below. The Variables dialog box appears as shown in Figure 2-17.



Variables

Name: repnames

Value: Consolidated

Name = Value List:

repnames = Consolidated||Chemical||Electric||Paper
report = Consolidated

Display

☐ Global

☒ Local

Figure 2-17 The Variable Dialog Box

4. Choose OK.

Creating a User-Entry Document Object

Now you will create a second document object that lists the names of the reports to appear in the first document object. Later you will create a hotspot over the list that displays the report you select.

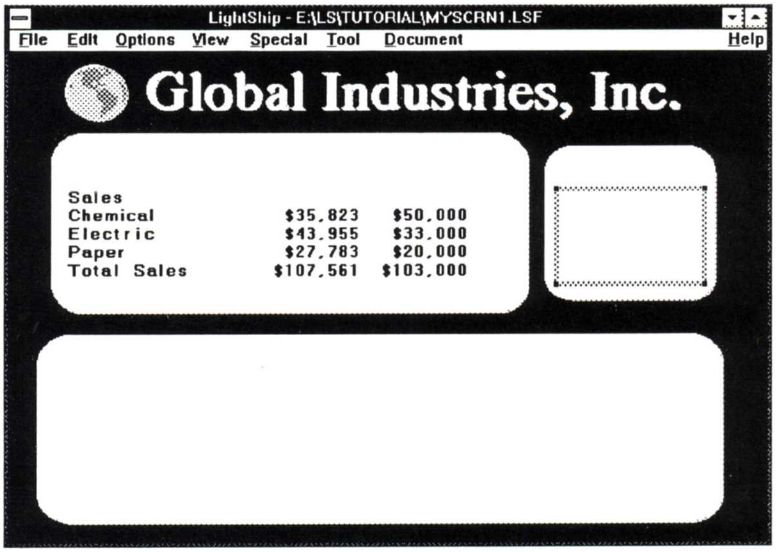
This document object will list the report names by referencing the variable *repnames*. When you reference a variable, LightShip substitutes the variable name with the value stored in the variable. You reference a variable by typing an at sign and enclosing the variable name in parentheses, for example, *@(repnames)*.

Creating the Second Document

❑ **To create the second document:**

1. Choose Tool Document.

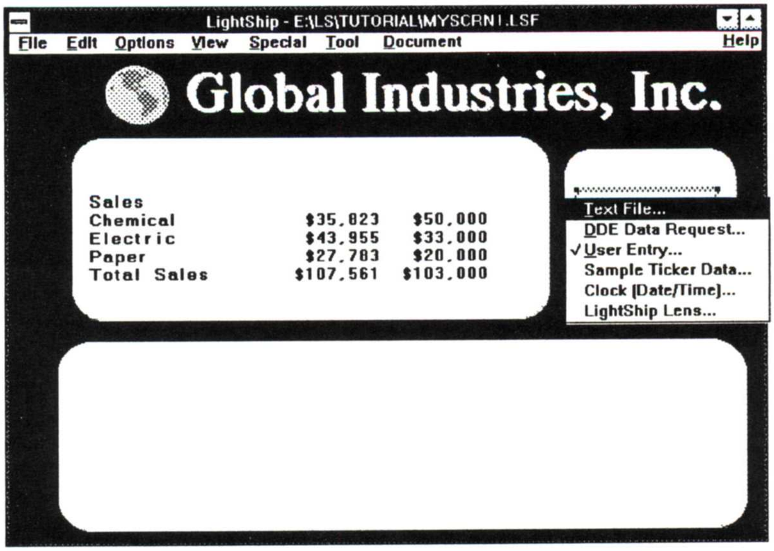
2. Drag the mouse as shown in Figure 2-18.



```
Sales
Chemical          $35,823     $50,000
Electric          $43,955     $33,000
Paper             $27,783     $20,000
Total Sales      $107,561    $103,000
```

Figure 2-18 Creating a Second Document Object

3. Double-click on the document to display the Document Source menu.

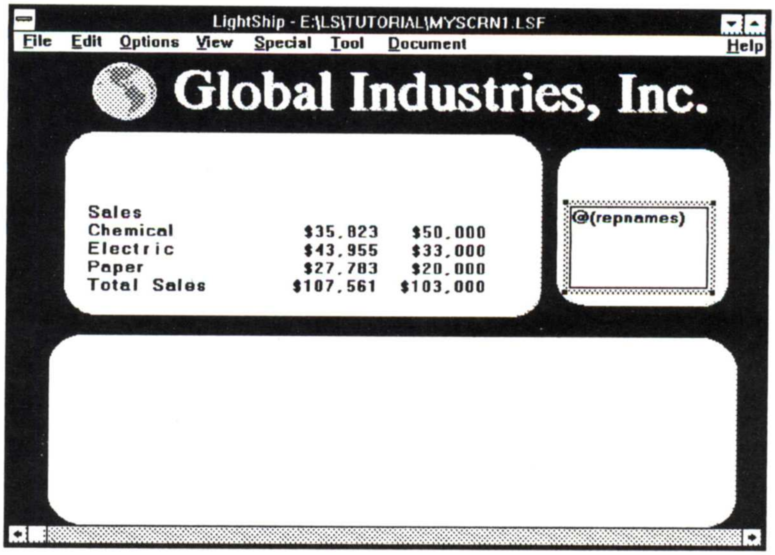


Sales		
Chemical	$35,823	$50,000
Electric	$43,955	$33,000
Paper	$27,783	$20,000
Total Sales	$107,561	$103,000

Figure 2-19 Selecting a Document Source

4. Choose User Entry.

A flashing vertical bar appears in the object.


LightShip - E:\LS\TUTORIAL\MYSCRN1.LSF
File Edit Options View Special Tool Document
Help
Global Industries, Inc.

Sales		
Chemical	$35,823	$50,000
Electric	$43,955	$33,000
Paper	$27,783	$20,000
Total Sales	$107,561	$103,000

@(repnames)

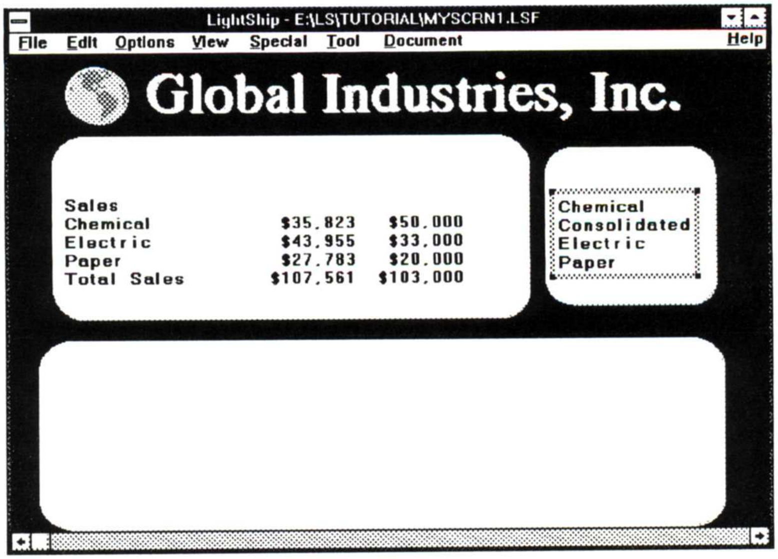
Figure 2-20 Typing a Variable Reference

5. Type:

   `@(repnames)`

   and press ENTER.

   The report names appear in the document object, as shown in Figure 2-21.



Sales		
Chemical	$35,823	$50,000
Electric	$43,955	$33,000
Paper	$27,783	$20,000
Total Sales	$107,561	$103,000

Chemical
Consolidated
Electric
Paper

Figure 2-21 The Second Document Object

6. Resize the document object so that there is no blank line after "Paper."

This is the end of the second exercise.

Choose File Save to save the file before going on to the next exercise, which shows you how to create text and draw objects.

* * *

Exercise 3: Displaying Text and Draw Objects

This exercise shows you how to create text objects and draw objects. Most documents display "live" data, that is, data from other sources, while the text in a text object is usually saved with the file. You use text objects to display small amounts of text, such as headers.

In this exercise, you will create three text objects and one draw object.

Setting Default Colors and Fonts

In this section, you'll set the default colors and fonts for the text objects.

Specifying Colors

☐ **To specify the text colors:**

1. Choose Tool Text.
2. Press F5.

   A dialog box appears.
3. Select the purple square in the second row and second column from the top-left corner, as shown in Figure 3-1.

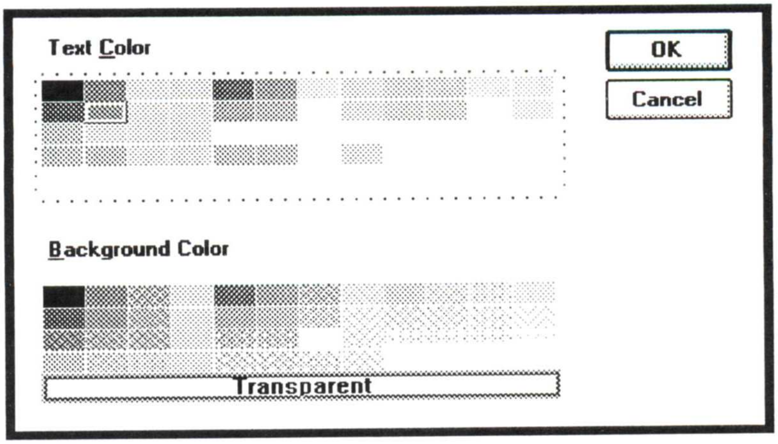


Figure 3-1 The Text Color Dialog Box

4. Select Transparent as the background color.
5. Choose OK.

Specifying the Font

❑ **To specify the font:**

1. Press F6.
2. Select Helv, 12, Bold.
3. Choose OK.

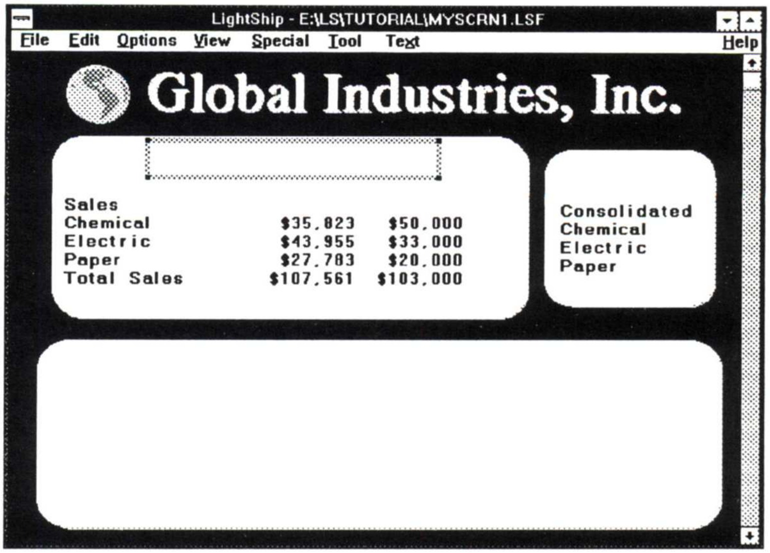
Creating Text Objects

In this section, you will create the headers for the document objects. The first text object will reference the variable *report* that you created in the last exercise, so that it will display the name of the current report.

❑ **To create the first text object:**

1. Drag the mouse over the area shown in Figure 3-2.

You might have to move and resize the document object so that the text object will fit.



Sales		
Chemical	$35,823	$50,000
Electric	$43,955	$33,000
Paper	$27,783	$20,000
Total Sales	$107,561	$103,000

Consolidated
Chemical
Electric
Paper

Figure 3-2 Creating the First Text Object

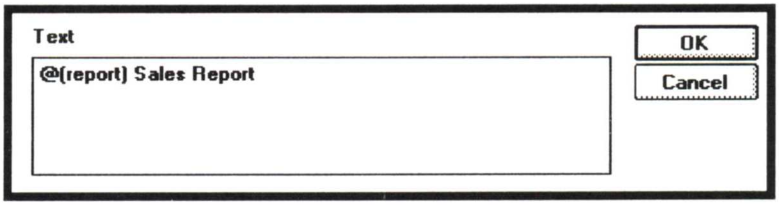
2. To enter the text, choose Text Text.

   The dialog box shown in Figure 3-3 appears.

3. Type:

   `@(report) Sales Report`

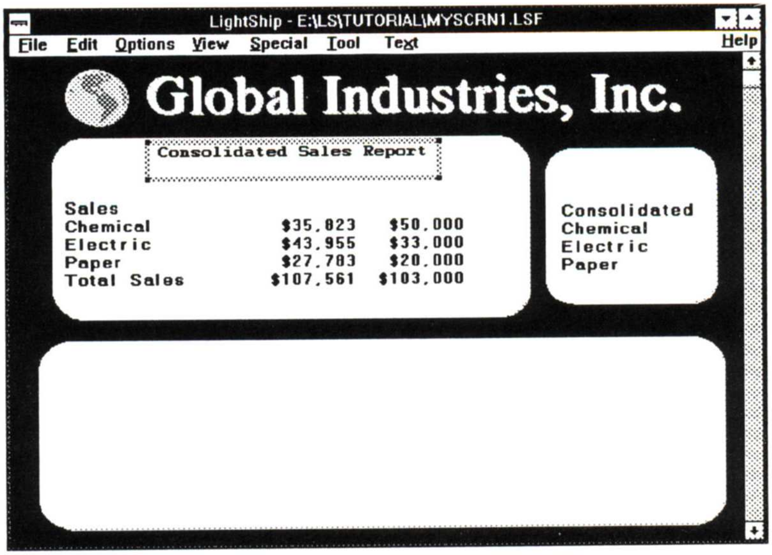
4. Choose OK.



@(report) Sales Report

Figure 3-3 Entering Text

You might have to resize the text object so the text will fit. The text object should appear as shown in Figure 3-4.



Consolidated Sales Report

Sales		
Chemical	$35,823	$50,000
Electric	$43,955	$33,000
Paper	$27,783	$20,000
Total Sales	$107,561	$103,000

Consolidated
Chemical
Electric
Paper

Figure 3-4 The First Text Object

Creating the Second Text Object

The second text object will display headers for the actual and budget columns.

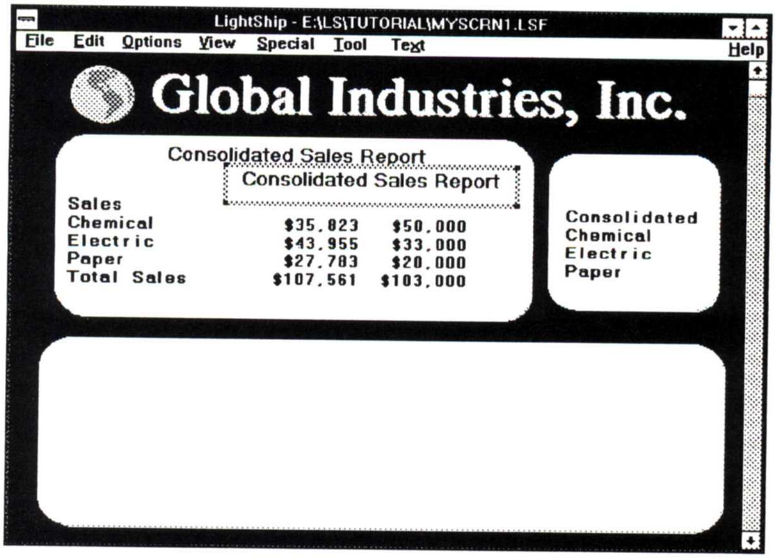
☐ **To create the second text object:**

1. Make sure the text object you just created is selected.

2. Choose Edit Copy.

3. Choose Edit Paste.

   This makes a copy of the text object, as shown in Figure 3-5.



Consolidated Sales Report

Consolidated Sales Report

Sales		
Chemical	$35,823	$50,000
Electric	$43,955	$33,000
Paper	$27,783	$20,000
Total Sales	$107,561	$103,000

Consolidated
Chemical
Electric
Paper

Figure 3-5 Copying the Text Object

4. Double-click on the new text object to open the Text dialog box.

5. Type:

   `Actual`

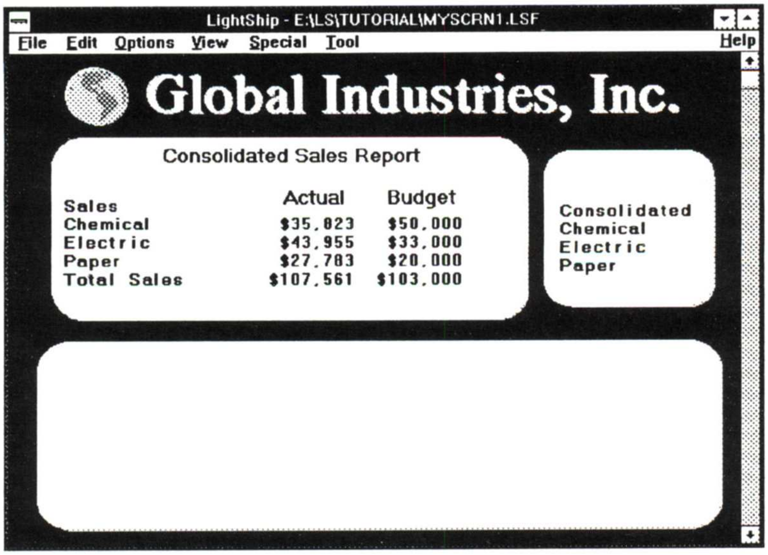
6. Space over seven characters and type:

   `Budget`

7. Choose OK.

8. Resize the text object and drag it so that it is above the actual and budget columns of the document object.

   If necessary, move the document object to make space for the text object.



Global Industries, Inc.

Consolidated Sales Report

Sales	Actual	Budget
Chemical	$35,823	$50,000
Electric	$43,955	$33,000
Paper	$27,783	$20,000
Total Sales	$107,561	$103,000

Consolidated
Chemical
Electric
Paper

Figure 3-6 The Second Text Object

Creating the Third Text Object

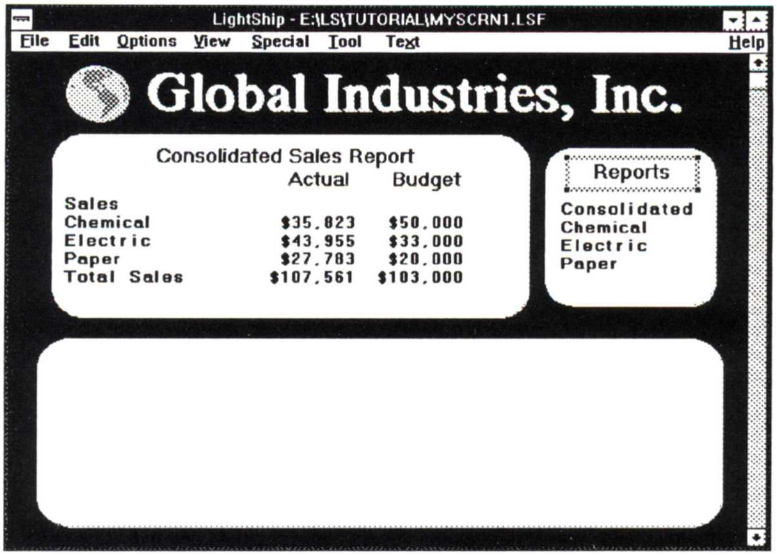
The third text object will display a header for the list of reports shown in the user-entry document object.

☐ **To create the third text object:**

1. Make sure the second text object you created is selected.
2. Press INS.
3. Choose Text Text or press F2.
4. Type:

   `Reports`

5. Choose OK.
6. Resize the text object and place it above the user-entry document object, as shown in Figure 3-7.


LightShip - E:\LS\TUTORIAL\MYSCRN1.LSF
File Edit Options View Special Tool Text
Help
Global Industries, Inc.
Reports

Consolidated Sales Report

	Actual	Budget
Sales		
Chemical	$35,823	$50,000
Electric	$43,955	$33,000
Paper	$27,783	$20,000
Total Sales	$107,561	$103,000

Consolidated
Chemical
Electric
Paper

Figure 3-7 The Third Text Object

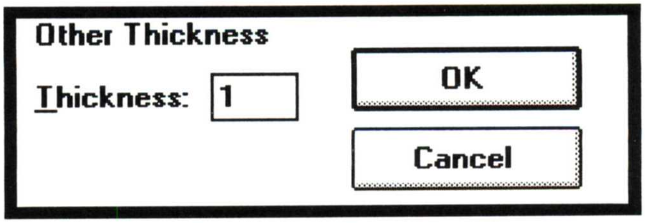
Creating a Draw Object

Now you will create a draw object to outline the "Consolidated Sales Report" text object.

☐ **To create a draw object:**

1. Choose Tool Draw.
2. Choose Draw Shape Round Rectangle.
3. Choose Draw Border Other.

   The dialog box shown in Figure 3-8 appears.



Other Thickness

Thickness: 1

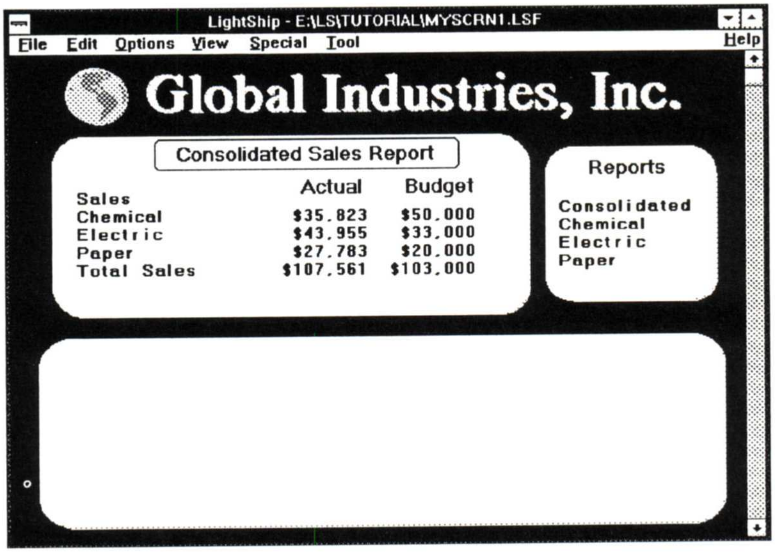
Figure 3-8 Customizing Border Thickness

4. Type:

   1

5. Choose OK.

6. Drag the rectangle around the text object, as shown in Figure 3-9.



LightShip - E:\LS\TUTORIAL\MYSCRN1.LSF

Global Industries, Inc.

Consolidated Sales Report

	Actual	Budget
Sales		
Chemical	$35,823	$50,000
Electric	$43,955	$33,000
Paper	$27,783	$20,000
Total Sales	$107,561	$103,000

Reports

Consolidated
Chemical
Electric
Paper

Figure 3-9 Drawing an Outline

7. Press F5.

8. Double-click on the black square.

This is the end of the third exercise. Choose File Save to save the file before going to the next exercise, which shows you how to perform a calculation and display the results.

* * *

Exercise 4: Calculating Variances

In this exercise you will subtract the budget figures from the actual figures to produce variance numbers.

You will store the numbers in a variable, which will be displayed in a user-entry document. This makes the variance data dynamic; it changes when the actual and budget figures change.

In the last part of the exercise, you will see how the order of objects affects how calculations are performed.

Creating a Menu Object

You'll use a special menu object, called &&Recalc, to perform the subtraction. This object is provided by LightShip and does not display on the screen. You can define actions for it, which are executed when the following events occur:

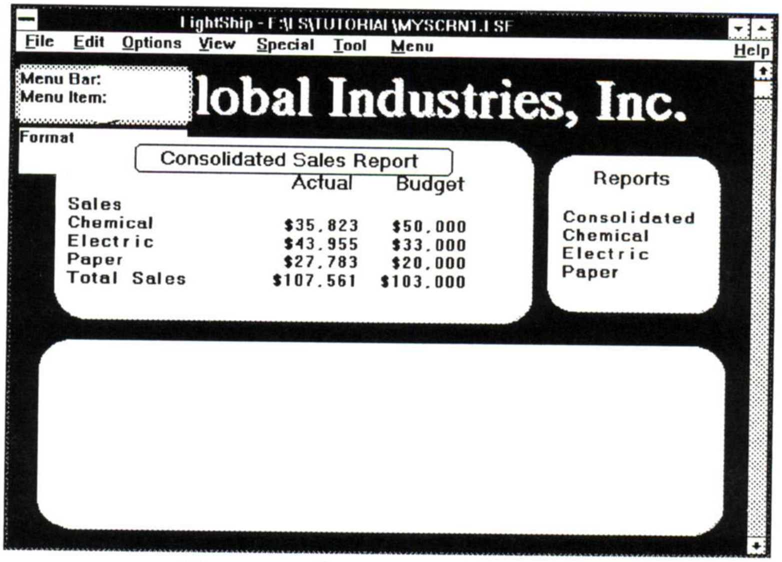
- A screen opens.
- A request for external data is issued.
- A Calculate Now is issued.
- A document object is scrolled.
- A variable that is the result of the actions is referenced.

☐ **To create the menu object:**

1. Choose View Show Hidden Objects.

2. Choose Tool Menu.

   Drag the mouse across the screen, as shown in Figure 4-1.


LightShip - F:\LS\TUTORIAL\MYSCRN1.LSF
File Edit Options View Special Tool Menu Help
Menu Bar:
Menu Item:
Format

lobal Industries, Inc.

Consolidated Sales Report

	Actual	Budget
Sales		
Chemical	$35,823	$50,000
Electric	$43,955	$33,000
Paper	$27,783	$20,000
Total Sales	$107,561	$103,000

Reports

Consolidated
Chemical
Electric
Paper

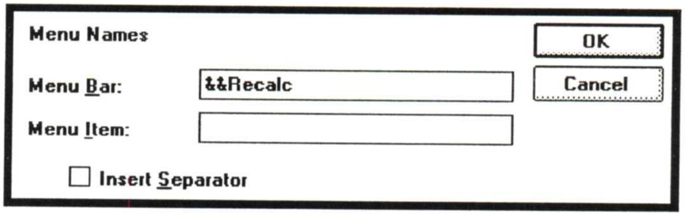
Figure 4-1 Creating a Menu Object

3. Choose Menu Names.

   The dialog box shown in Figure 4-2 appears.

4. In the Menu Bar text box, type:

   `&&Recalc`



Menu Names

Menu Bar: &&Recalc

Menu Item:

☐ Insert Separator

Figure 4-2 Defining Menu Names

5. Choose OK.

Defining the Menu Action

In this section, you'll define the menu ation.

☐ **To define the menu action:**

1. Choose Menu Actions.

   A dialog box appears.

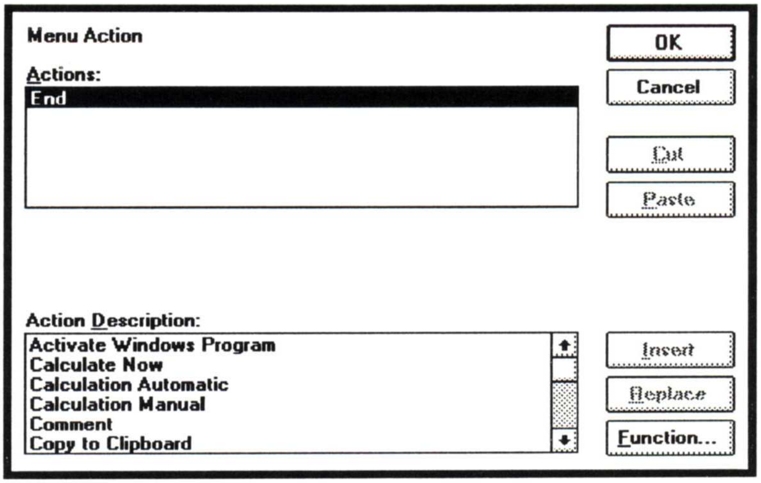


Figure 4-3 Defining Menu Actions

2. Choose the Function button in the lower-right corner.

   A dialog box appears.

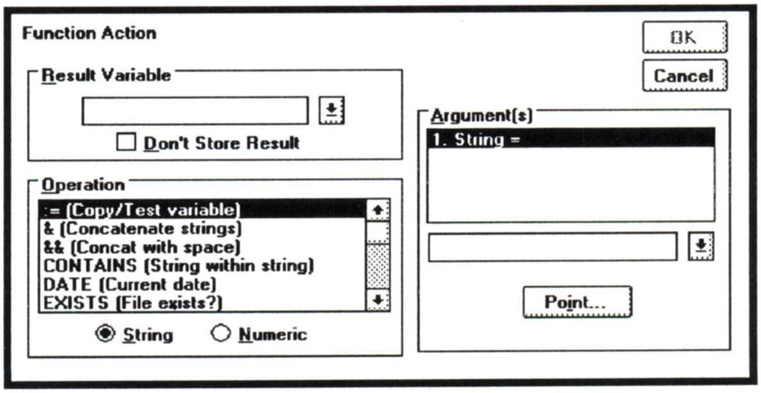


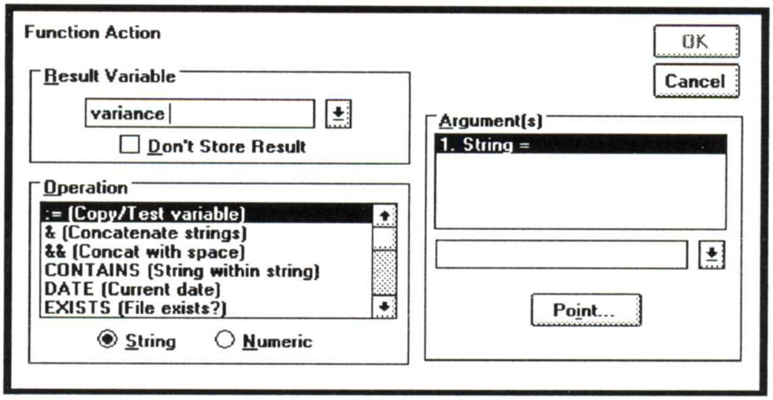
Figure 4-4 Defining a Function

Defining a Result Variable

☐ **First, define the result variable:**

1. In the Result Variable text box, type:

   `variance`



Result Variable: variance

☐ Don't Store Result

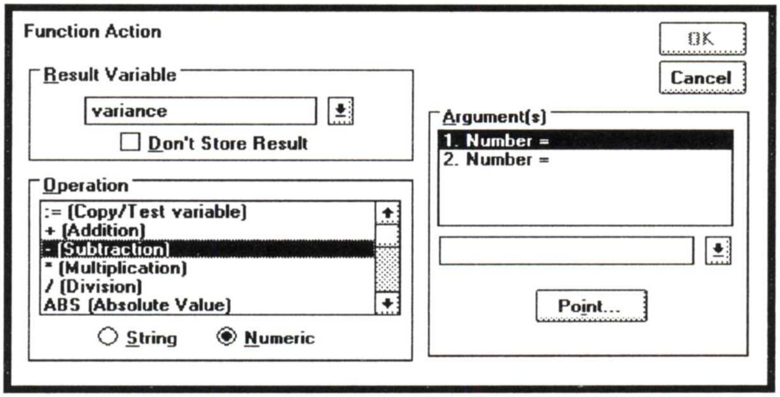
● String ○ Numeric

Figure 4-5 Defining the Result Variable

Selecting a Function

The string functions are listed in the Operation list box.

2. Choose Numeric to display the list of numeric functions.



Result Variable: variance

☐ Don't Store Result

○ String ● Numeric

Figure 4-6 Selecting a Numeric Function

3. Select **-(Subtraction)**.

Specifying Arguments

Now you need to specify the data for the first argument, which is already selected in the Argument(s) list box. You will define the first argument by pointing to the actual column in the document object.

☐ **To select the arguments:**

1. Choose the Point button.

   The screen changes to Point mode.

2. Select the actual figures as shown in Figure 4-7.

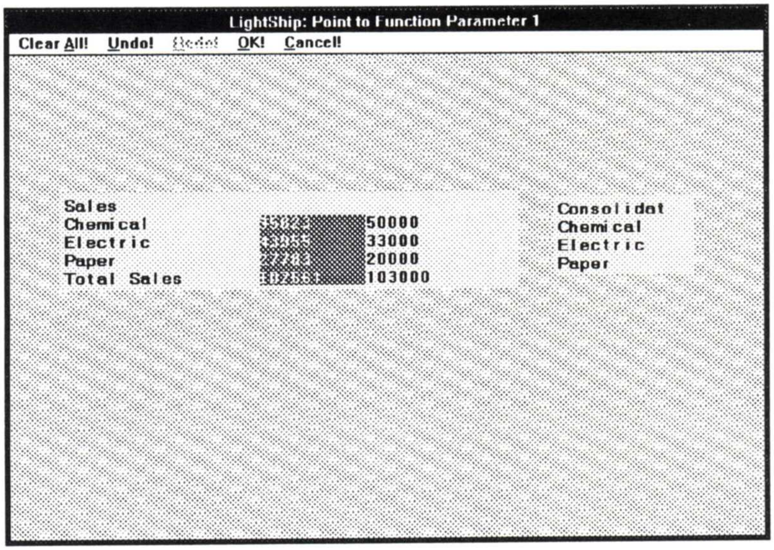
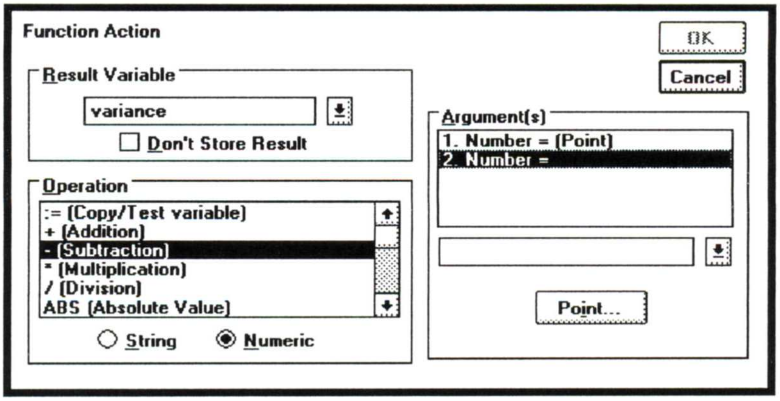


Figure 4-7 Specifying the First Argument

3. Choose OK!.

4. Select the second number in the Argument(s) list box, as shown in Figure 4-8.



Result Variable: variance

☐ Don't Store Result

Operation:
- := (Copy/Test variable)
- + (Addition)
- - (Subtraction)
- * (Multiplication)
- / (Division)
- ABS (Absolute Value)

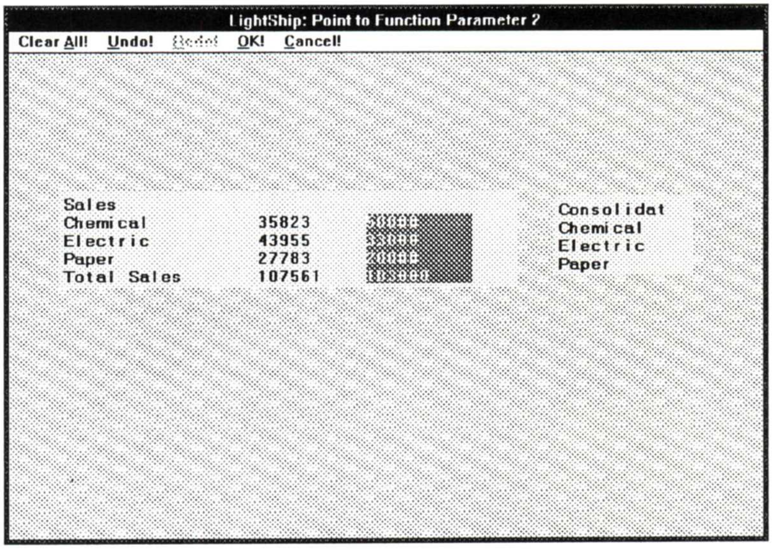
○ String ● Numeric

Argument(s):
1. Number = (Point)
2. Number =

Figure 4-8 Selecting the Second Argument

5. Choose Point.

6. Select the budget figures, as shown in Figure 4-9.


LightShip: Point to Function Parameter 2
Clear All! Undo! Redo! OK! Cancel!

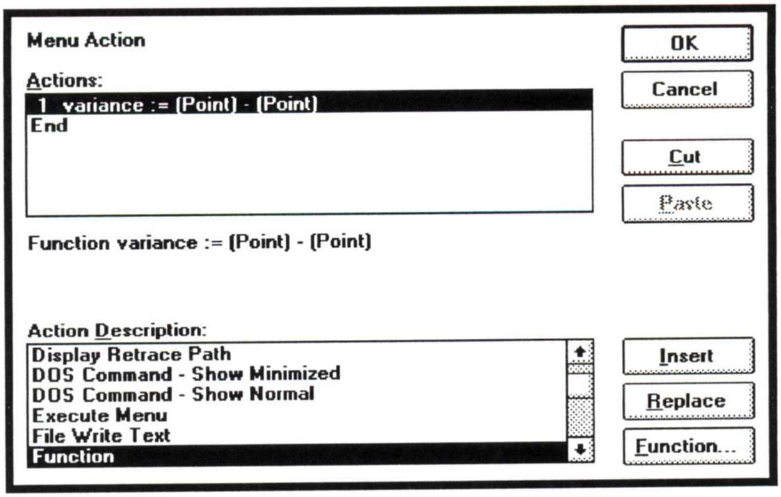
```
Sales                                                 Consolidat
Chemical            35823      30000                  Chemical
Electric            43955      53000                  Electric
Paper               27783      20000                  Paper
Total Sales         107561     103000
```

Figure 4-9 Specifying the Second Argument

7. Choose OK!

8. Choose OK to close the Function Action dialog box.

The function is displayed in the Actions list box, as shown in Figure 4-10.



1 variance := (Point) - (Point)
End

Function variance := (Point) - (Point)

Figure 4-10 The Menu Action

9. Choose OK to close the Menu Action dialog box.

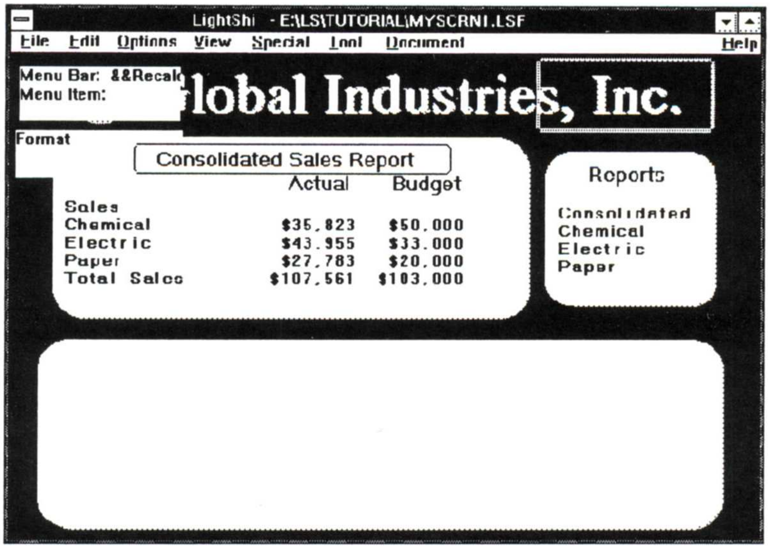
Creating a User-Entry Document Object

In this section you will create a user-entry document object in which you'll display the variance numbers by referencing the variable, *@(variance)*. The reason you need to display these numbers in a document object is because in a later exercise, you will create a chart of the variances. To chart them, you must be able to select the numbers on the Point mode screen; and to select numbers in Point mode they must be displayed in a document object. Later, you can hide the document object so that it does not show on the application screen. Hidden document objects do not show on the screen except in Point mode.

☐ **To create the user-entry document object:**

1. Choose Tool Document.

Drag the mouse in the top-right corner of the screen, as shown in Figure 4-11.



Consolidated Sales Report

	Actual	Budget
Sales		
Chemical	$35,823	$50,000
Electric	$43,955	$33,000
Paper	$27,783	$20,000
Total Sales	$107,561	$103,000

Figure 4-11 Creating a User-Entry Document

2. Double-click on the object or press F2 to display the Document Source menu.

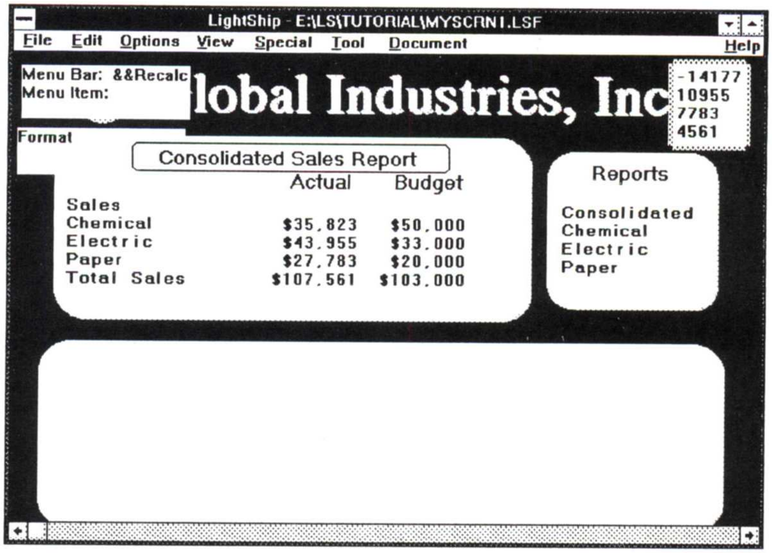
3. Choose User Entry.

4. Type:

   `@(variance)`

5. Press ENTER.

Now resize the *@(variance)* user-entry document so that the column of numbers shows in the object window.



Menu Bar: &&Recalc
Menu Item:

lobal Industries, Inc

-14177
10955
7783
4561

Consolidated Sales Report

	Actual	Budget
Sales		
Chemical	$35,823	$50,000
Electric	$43,955	$33,000
Paper	$27,783	$20,000
Total Sales	$107,561	$103,000

Consolidated
Chemical
Electric
Paper

Figure 4-12 Displaying the Variance Figures

Ordering the Objects

At this point, if you close and open the screen or if you select the text file for the document object again, the value of *variance* will not be calculated or displayed in the user-entry document. This is because of the order of the objects.

☞ **Important**

LightShip objects are ordered in relation to each other. This order affects both the behavior and appearance of an application. Objects are evaluated from front to back, that is, the object that is in front of all others is evaluated first. If an object has actions, the actions are executed at the time the object is evaluated.

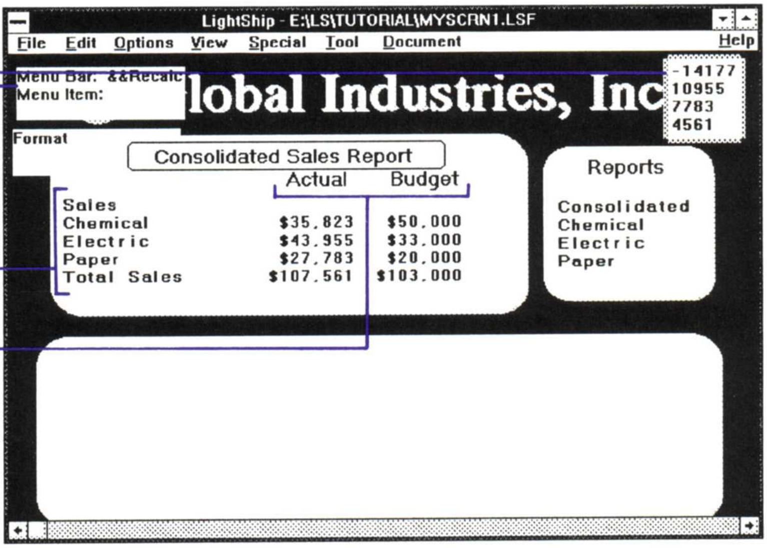
The calculation that the &&Recalc menu object will perform is a good illustration of how the order of objects can affect the behavior of an application. For this calculation to work correctly, the document object used as the source for the calculation must be in front of the &&Recalc menu object so that its data is displayed before the &&Recalc menu object points to it. Otherwise the &&Recalc object will be pointing at blank space or incorrect values. Also, the &&Recalc menu object must be in front of the user-entry document that displays the result, so that the results are calculated before the variable substitution occurs.

If you created the objects in the order given in the exercise, they need to be reordered. Because objects are usually created from front to back, the first object you created is the furthest back and the last to be loaded (if it has source data) or the last to be executed (if the object has actions).

☐ **To reorder the objects:**

1. Select the object with the *@(variance)* reference and choose Special Bring to Front.

2. Select the &&Recalc menu object and choose Special Bring to Front.



-14177
10955
7783
4561

Consolidated Sales Report

	Actual	Budget
Sales		
Chemical	$35,823	$50.000
Electric	$43,955	$33.000
Paper	$27,783	$20.000
Total Sales	$107,561	$103.000

1. The Document Object with @(variance)

2. The &&Recalc Menu Object

3. The Text File Document Object

4. The Text Object

Figure 4-13 Reordering the Objects

3. Select the document object that displays the actual and budget figures and choose Special Bring to Front.

The text object with the Actual and Budget titles will disappear behind the document object.

4. Select the text object by clicking in the document object at the point where the text object is displayed behind it.

5. Press CTRL+UP ARROW until you see the Text menu displayed on the menu bar, and then choose Special Bring to Front.

Why the Calculation Occurred the First Time

The calculation occurred the first time because the text document object was already loaded with data and the variable *variance* was referenced. Because Special Calculation Automatic is on by default, the referencing of the variable caused the &&Recalc's actions to be executed.

Hiding the Document Object

Now you can hide the document object that displays the variance numbers.

☐ **To hide the document object:**

1. Select the document object that displays the variance numbers.

2. Choose Document Hidden.

3. Choose View Show Hidden Objects to turn off the display of hidden objects.

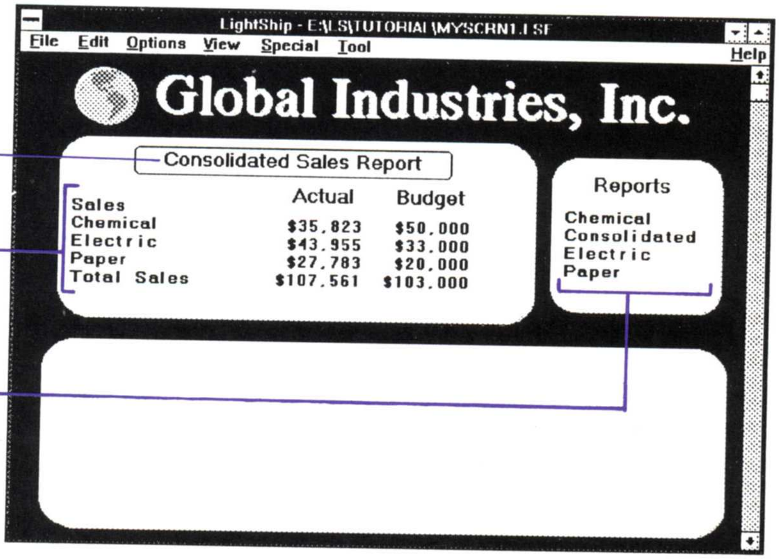
4. Choose File Save.

This is the end of Exercise 4. Go on to the next exercise to learn how to create a hotspot that displays different text files in a document object.

⁂

Exercise 5: Displaying Text Files Dynamically

In this exercise, you will create a hotspot so that when you click on an item in the user-entry document object, the sales report for that item will appear in the text file document object and the corresponding report name will appear in the text object header.



Sales	Actual	Budget
Chemical	$35,823	$50,000
Electric	$43,955	$33,000
Paper	$27,783	$20,000
Total Sales	$107,561	$103,000

Chemical
Consolidated
Electric
Paper

This Text Object Will Change Dynamically

The Text File in the Document Object Will Change Dynamically

You Will Create a Hotspot In Front of the User-Entry Document Object

Figure 5-1 The First Screen

You'll start by defining a variable called *data* that will contain the filenames that can be displayed. Like *repnames*, this variable will have one column with four rows. The filenames will correspond to the report names in the user-entry document. For example:

Files (*data*)	**Reports** (*repnames*)
consol3	Consolidated
chem3	Chemical
elect3	Electric
paper3	Paper

The hotspot will be in front of the user-entry document. You will define it with the MOUSEROW function to return the row number that you click on. Once you know the row that was clicked on, you can use the FETCH function to get the correct filename from *data* and correct report name from *repnames*.

The steps will be:

- Define the variables.
- Define the hotspot and the hotspot actions.
- Change the text file document object source so that it is a variable reference.

Defining the Variables

In this section, you'll define two local variables much like *repnames* and *report*. One will be called *data* and it will contain all the filenames. The other will be called *datafile* and it will contain the currently selected filename.

☐ **To define the variables:**

1. Choose Special Variables.

   The Variables dialog box appears.

2. If desired, click the Globals check box to turn off the display of global variables.

3. In the Name text box, type:

   `data`

4. Press TAB to move to the text box on the right and type:

   `consol3`

   and press CTRL+ENTER.

5. Type:

   `chem3`

   and press CTRL+ENTER.

6. Type:

   `elect3`

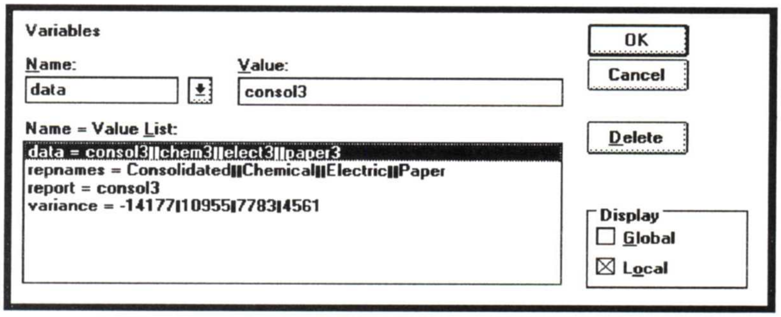
   and press CTRL+ENTER.

7. Type:

   `paper3`

   and click in the list box below to display the definition.

   The dialog box should resemble Figure 5-2.



Name: data

Value: consol3

Name = Value List:

```
data = consol3||chem3||elect3||paper3
repnames = Consolidated||Chemical||Electric||Paper
report = consol3
variance = -14177|10955|7783|4561
```

Display
☐ Global
☒ Local

Figure 5-2 Displaying Variables

Initializing a Variable

Now, initialize *datafile* to the consolidated report.

☐ **To create the second variable:**

1. In the Name text box, type:

   `datafile`

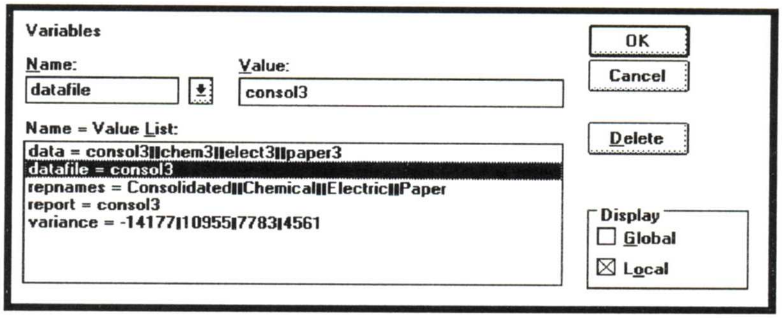
2. Press TAB to move to the text box on the right.

3. Type:

   `consol3`

   and click in the list box below to display the definition.

   The Variables dialog box should appear as shown in Figure 5-3.



Name: datafile

Value: consol3

data = consol3‖chem3‖elect3‖paper3
datafile = consol3
repnames = Consolidated‖Chemical‖Electric‖Paper
report = consol3
variance = -14177|10955|7783|4561

Figure 5-3 The Current Variable Values

4. Choose OK.

Creating a Hotspot

In this section you will create the hotspot.

☐ **To create the hotspot:**

1. Choose View Outline All Objects.
2. Choose Tool Hotspot.
3. Position the crossbar cursor on the upper-left corner of the user-entry document object outline.

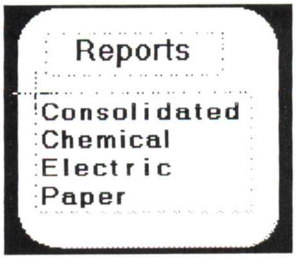
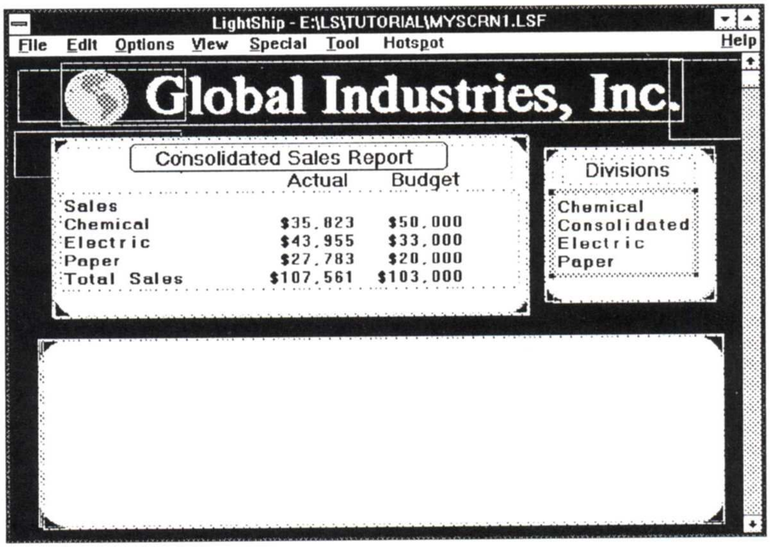


Figure 5-4 Creating the Hotspot

Then drag the mouse over the document object, as shown in Figure 5-5.

Make sure the hotspot is the same size or slightly smaller than the document object. If the hotspot is larger than the document object and you click on it in an area outside of a document cell, the MOUSEROW function will return a zero.



Consolidated Sales Report

	Actual	Budget
Sales		
Chemical	$35,823	$50,000
Electric	$43,955	$33,000
Paper	$27,783	$20,000
Total Sales	$107,561	$103,000

Figure 5-5 Creating a Hotspot

4. Turn off View Outline All Objects.

Defining the Hotspot Actions

☐ **To define the hotspot actions:**

1. Make sure the hotspot is selected.
2. Choose Hotspot Actions.

   The Hotspot Action dialog box appears.
3. Choose the Function button in the lower-right corner.

   The Function Action dialog box appears. This time you will use String functions.

Defining the Result Variable

In the Result Variable text box, type:

```
row
```

When you click on an item in the document object, *row* will contain the number of the row on which you clicked.

Selecting the MOUSEROW Function

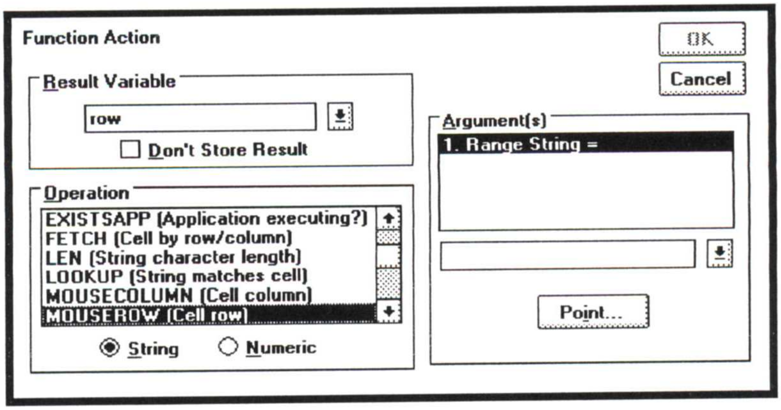
The MOUSEROW function returns the row number that you click on.

- Click in the Operation list box, type "m", and press the DOWN ARROW key until you select MOUSEROW.

  Or

- Scroll down and select MOUSEROW from the Operation list box.

  The dialog box should look like Figure 5-6.



Function Action

Result Variable: row

☐ Don't Store Result

Operation:
- EXISTSAPP (Application executing?)
- FETCH (Cell by row/column)
- LEN (String character length)
- LOOKUP (String matches cell)
- MOUSECOLUMN (Cell column)
- MOUSEROW (Cell row)

● String ○ Numeric

Argument(s):
1. Range String =

Figure 5-6 The Hotspot Action Dialog Box

Specifying the Argument

MOUSEROW has only one argument, which is already selected in the Argument(s) list box.

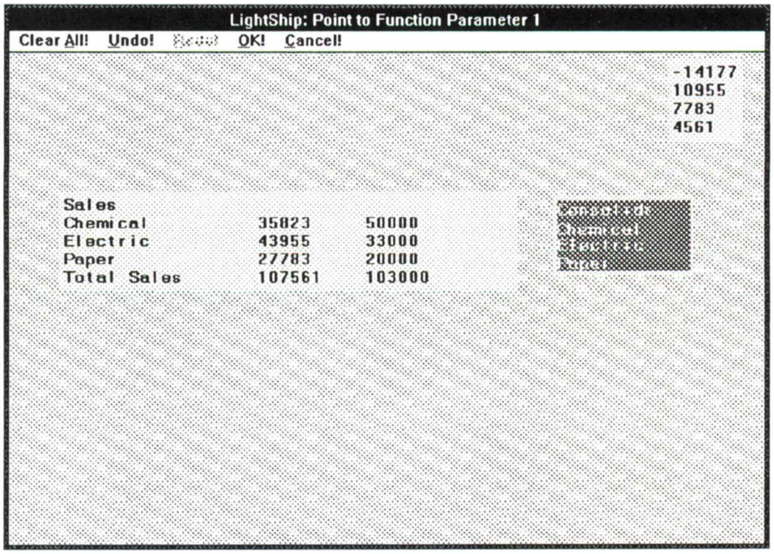
☐ **To specify the argument:**

1. Choose Point.

   The Point mode screen appears.

2. Select the items in the user-entry document object, as shown in Figure 5-7.

3. Choose OK!.



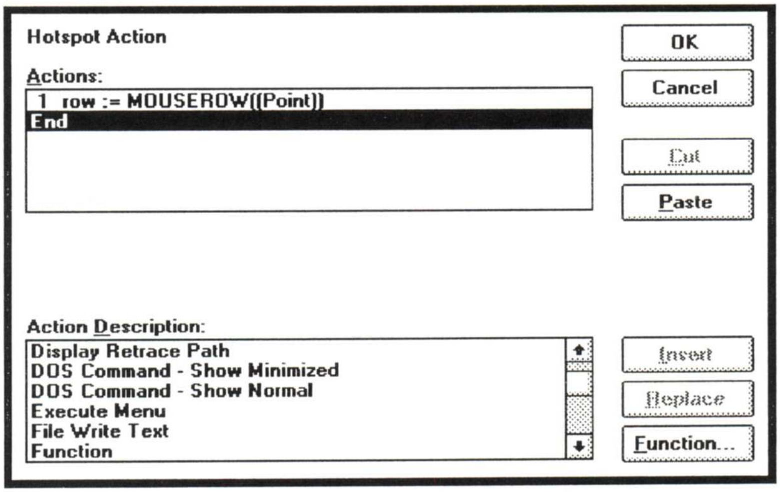
```
                                                         -14177
                                                         10955
                                                         7783
                                                         4561

  Sales
  Chemical              35823      50000
  Electric              43955      33000
  Paper                 27783      20000
  Total  Sales          107561     103000
```

Figure 5-7 Specifying a Cell Range as an Argument

4. Choose OK to close the Function Action dialog box.

   The function is displayed in the Actions list box as shown in Figure 5-8.



```
1  row := MOUSEROW((Point))
End
```

```
Display Retrace Path
DOS Command - Show Minimized
DOS Command - Show Normal
Execute Menu
File Write Text
Function
```

Figure 5-8 The Hotspot Action Dialog Box

Specifying the FETCH Functions

The FETCH function gets the value of a specified row and column in a variable. Once MOUSEROW has gotten the row number of the cell you've clicked on, you can use it in the FETCH function to get the appropriate values out of *repnames* and *data*. Both *repnames* and *data* are only one column, so we know the column number is one.

We want the FETCH functions to follow the MOUSEROW function.

☐ **To specify the FETCH functions:**

1. Make sure END is selected in the Actions list box so that the new action will be inserted above it in the list.
2. Choose Function.
3. Click the down arrow next to the Result Variable text box and select *report*, as shown in Figure 5-9.

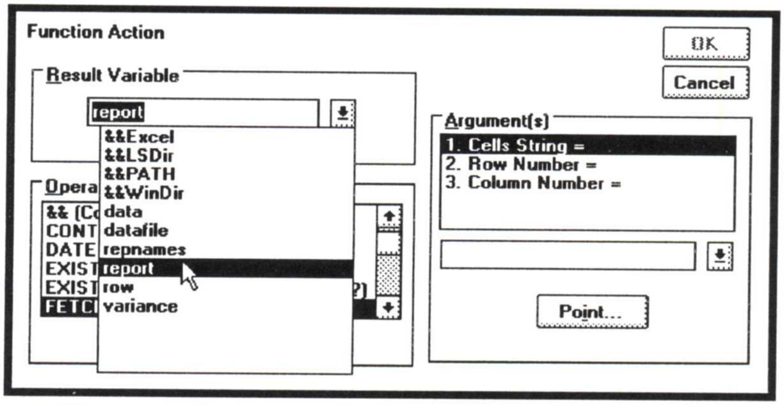


Figure 5-9 Selecting a Result Variable from the List

4. Now click in the Operations list box and press the letter "F" on your keyboard to go to the first operation that starts with "F."

   This selects FETCH.

5. For the first argument, select *repnames* from the drop-down list, as shown in Figure 5-10.

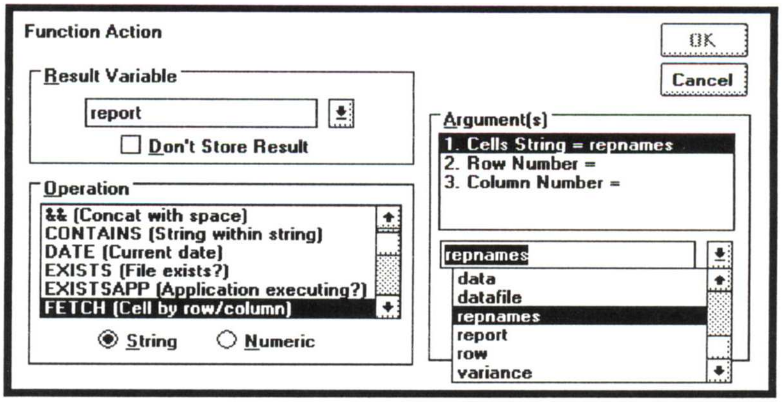


Figure 5-10 Selecting an Argument from the List

6. Select the second argument, Row Number, and in the arguments text box, type:

```
row
```

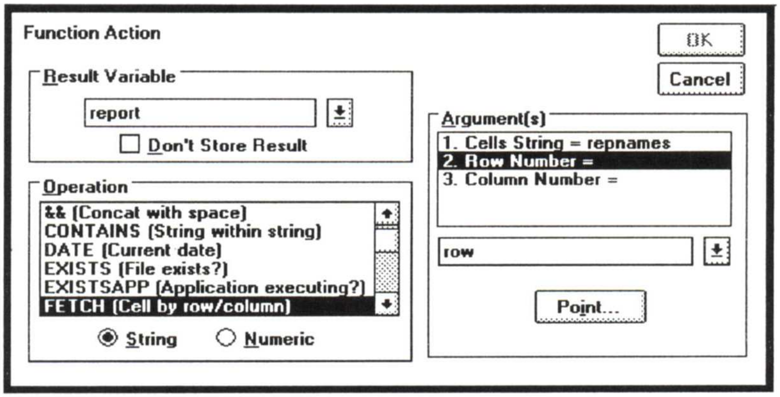


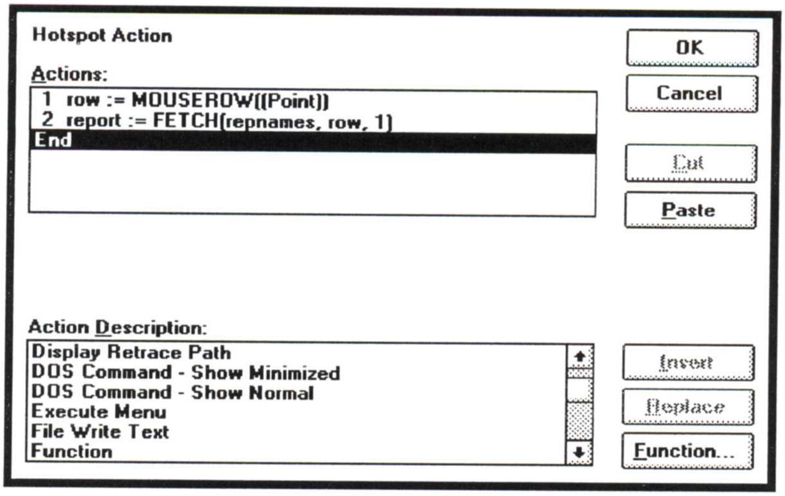
Figure 5-11 Typing an Argument

7. Select the third argument, Column Number, and in the arguments text box, type:

```
1
```

8. Choose OK.

   The dialog box should look like Figure 5-12.



Hotspot Action

Actions:

1 row := MOUSEROW((Point))
2 report := FETCH(repnames, row, 1)
End

Action Description:

Display Retrace Path
DOS Command - Show Minimized
DOS Command - Show Normal
Execute Menu
File Write Text
Function

Figure 5-12 The Hotspot Action Dialog Box

Copying and Editing a Function

Now you can copy and edit this function, since the next FETCH function performs the same operation on *data*.

☐ **To copy and edit a function:**

1. Make sure the "report:=FETCH..." line is selected in the Actions list box.
2. Choose the Cut button.
3. Choose the Paste button twice.

   There should be two "report:=FETCH..." lines in the Actions list box.
4. Select the second one.
5. Choose the Replace button.

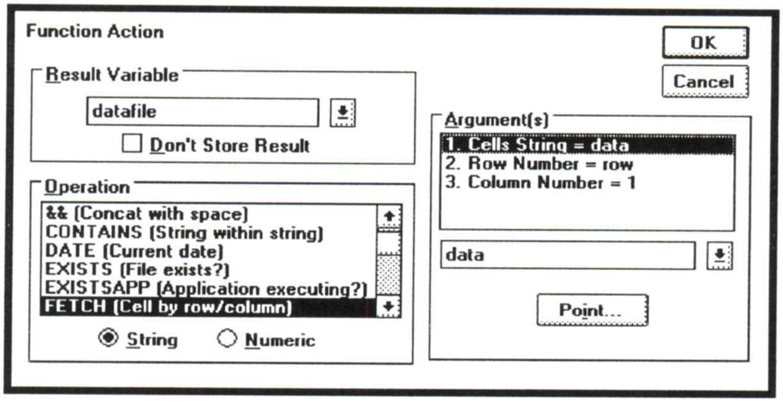
The Function Action dialog box appears.

6. For the result variable, select or type:

   `datafile`

7. For the first argument, select or type:

   `data`



Function Action

Result Variable: datafile

☐ Don't Store Result

Operation:
&& (Concat with space)
CONTAINS (String within string)
DATE (Current date)
EXISTS (File exists?)
EXISTSAPP (Application executing?)
FETCH (Cell by row/column)

● String ○ Numeric

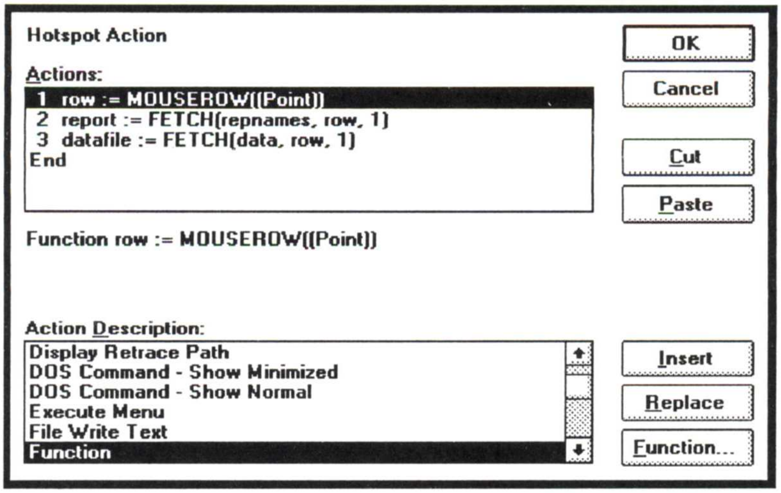
Argument(s):
1. Cells String = data
2. Row Number = row
3. Column Number = 1

data

Figure 5-13 Specifing a Result Variable

8. Choose OK.

   The dialog box should resemble Figure 5-14.



Hotspot Action

Actions:

```
1  row := MOUSEROW((Point))
2  report := FETCH(repnames, row, 1)
3  datafile := FETCH(data, row, 1)
End
```

Function row := MOUSEROW((Point))

Action Description:

- Display Retrace Path
- DOS Command - Show Minimized
- DOS Command - Show Normal
- Execute Menu
- File Write Text
- Function

Figure 5-14 Editing a Function

9. Choose OK.

Referencing Variables

Before you can test these functions, you need to put the variable reference in the Document Text File dialog box.

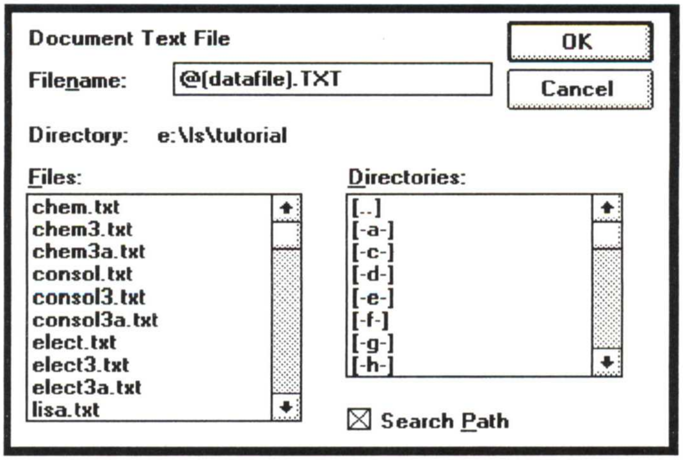
1. Select the document object with the actual and budget figures and press F2.

2. Choose Text File as the document object's source.

   The Document Text File dialog box appears.

3. In the Filename text box, type:

   `@(datafile).txt`


Document Text File

Filename: @(datafile).TXT

Directory: e:\ls\tutorial

☒ Search Path

Figure 5-15 Specifying a Text File

4. Choose OK.

Testing the Hotspot

To test the hotspot, you must go to the Browse level.

☐ **To test the hotspot:**

1. Choose Special Author or press the F4 key.

   Notice that the menu bar changes to the Browse level menu bar.

2. Move the cursor over the hotspot that is in front of the Report names and click on each one of the items.

   The text file in the document object and the text in the header should change.

☞ If You Have Problems

If the text file or header doesn't change, check the following:

- Make sure the values of *repnames* and *data* are correct and that they are separated by CTRL+ENTER.
- Make sure the Document Text File dialog box is referencing @(datafile).TXT and the text object is referencing @*(report)*.
- Make sure the hotspot is the same size or slightly smaller than the document object.
- Make sure that the MOUSEROW function is pointing only to the list items shown in Figure 5-7 and not to any blank lines.
- To see if *row* and other parameters are being set correctly, use the Debug window. For more information on Debug, see the next section.

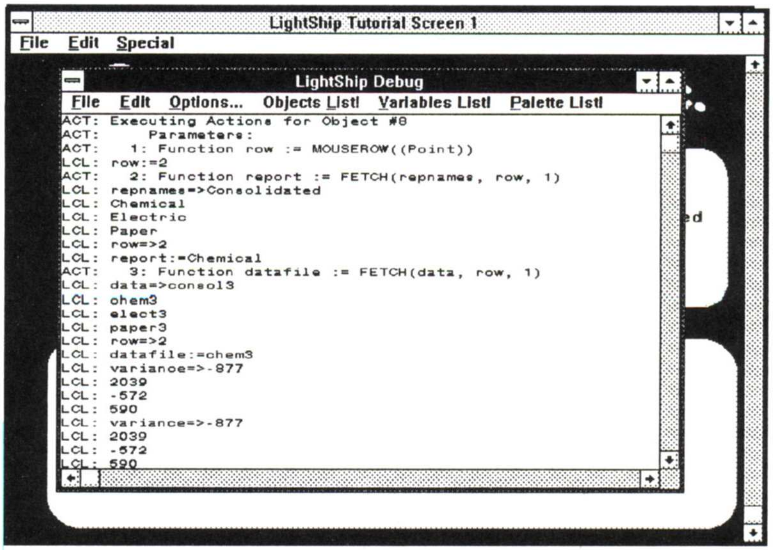
The Debug Window

The Debug window lets you list objects, and trace actions, variables, and parameters.

☐ **To open the Debug window:**

1. Make sure you are at the Author level.
2. Choose Special Debug.

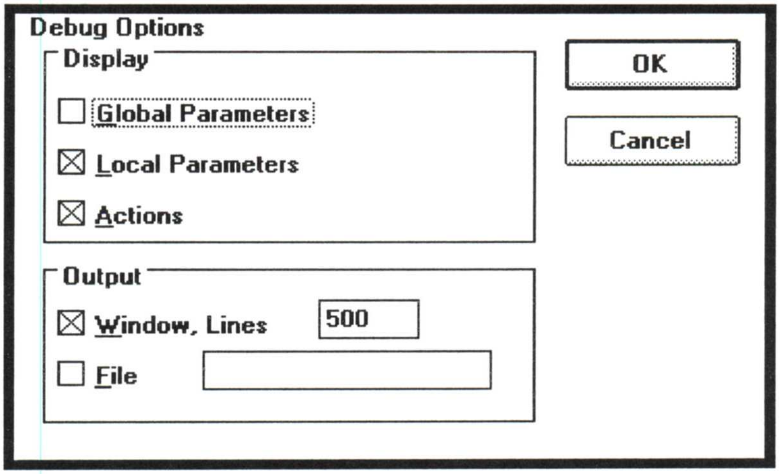
   The Debug window opens, as shown in Figure 5-16.


LightShip Tutorial Screen 1
File Edit Special
LightShip Debug
File Edit Options... Objects List! Variables List! Palette List!

```
ACT: Executing Actions for Object #8
ACT:      Parameters:
ACT:   1: Function row := MOUSEROW((Point))
LCL: row:=2
ACT:   2: Function report := FETCH(repnames, row, 1)
LCL: repnames=>Consolidated
LCL: Chemical
LCL: Electric
LCL: Paper
LCL: row=>2
LCL: report:=Chemical
ACT:   3: Function datafile := FETCH(data, row, 1)
LCL: data=>consol3
LCL: chem3
LCL: elect3
LCL: paper3
LCL: row=>2
LCL: datafile:=chem3
LCL: variance=>-877
LCL: 2039
LCL: -572
LCL: 590
LCL: variance=>-877
LCL: 2039
LCL: -572
LCL: 590
```

Figure 5-16 The Debug Window

3. Choose Options on the Debug window and make sure Local Parameters is turned on.



Display

☐ Global Parameters

☒ Local Parameters

☒ Actions

Output

☒ Window, Lines 500

☐ File

Figure 5-17 Setting Debug Options

4. Choose OK.

5. Using the Windows Control menu, choose Control Switch to LightShip.
6. Press F4 to go to the Browse level.
7. Click on an item in the list.
8. Choose Control Switch to LightShip Debug.
9. Look to see if *row* is being set to the correct value.
10. When you are finished, press F4 to return to the Author level.

This is the end of Exercise 5. Before going on to Exercise 6, make sure Consolidated is selected and then save the file.

* * *

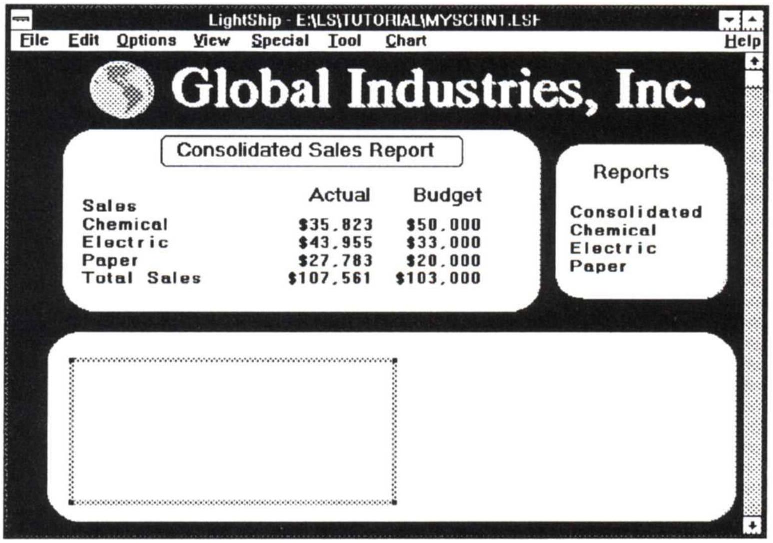
Exercise 6: Creating Charts

In this exercise, you will create two charts. One chart will show the actual and budget figures from the text file document object, and the other chart will show the variances from the user-entry document object.

Creating the First Chart

☐ **To create a chart:**

1. Choose Tool Chart.
2. Drag the mouse over the area shown in Figure 6-1.



Consolidated Sales Report

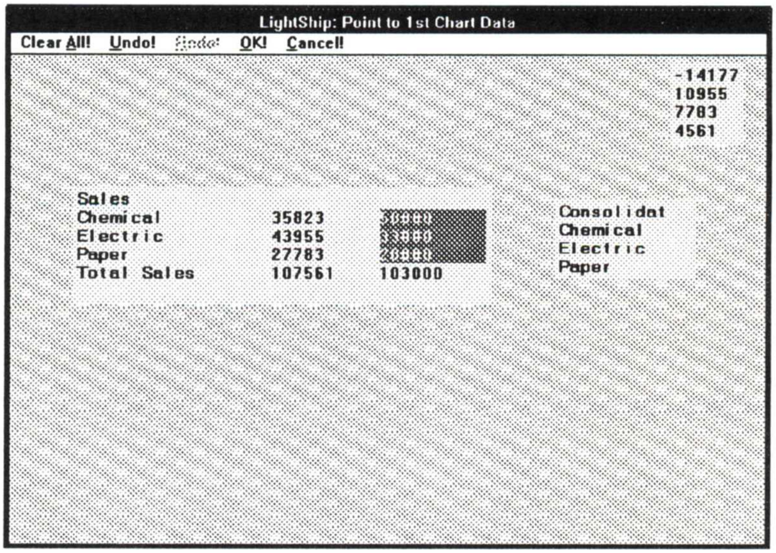
Sales	Actual	Budget
Chemical	$35,823	$50,000
Electric	$43,955	$33,000
Paper	$27,783	$20,000
Total Sales	$107,561	$103,000

Figure 6-1 Creating a Chart

3. Choose Chart Data New Series.

   The Point mode screen appears.

Selecting the First Data Series



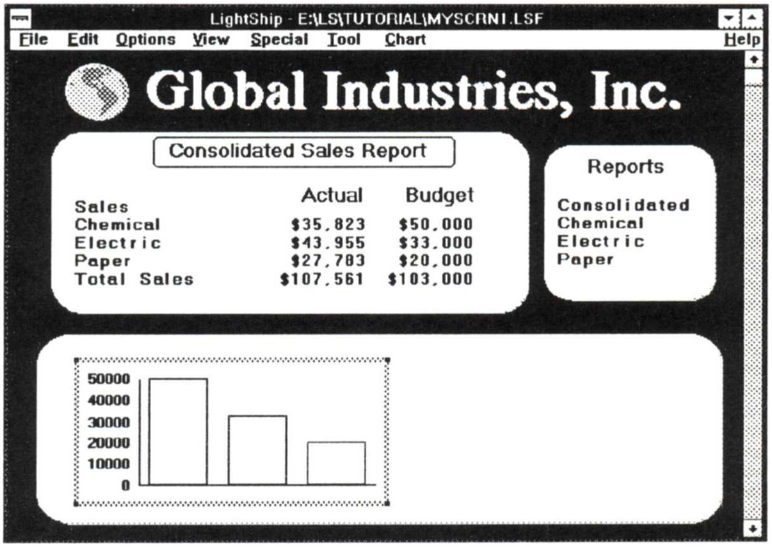
-14177
10955
7783
4561

Sales		
Chemical	35823	50000
Electric	43955	33000
Paper	27783	20000
Total Sales	107561	103000

Consolidat
Chemical
Electric
Paper

Figure 6-2 Selecting the First Data Series

4. Select the first three numbers in the budget column, as shown in Figure 6-2 and choose OK!



Consolidated Sales Report

Sales	Actual	Budget
Chemical	$35,823	$50,000
Electric	$43,955	$33,000
Paper	$27,783	$20,000
Total Sales	$107,561	$103,000

Reports

Consolidated
Chemical
Electric
Paper

Figure 6-3 The Chart Appears on the Screen

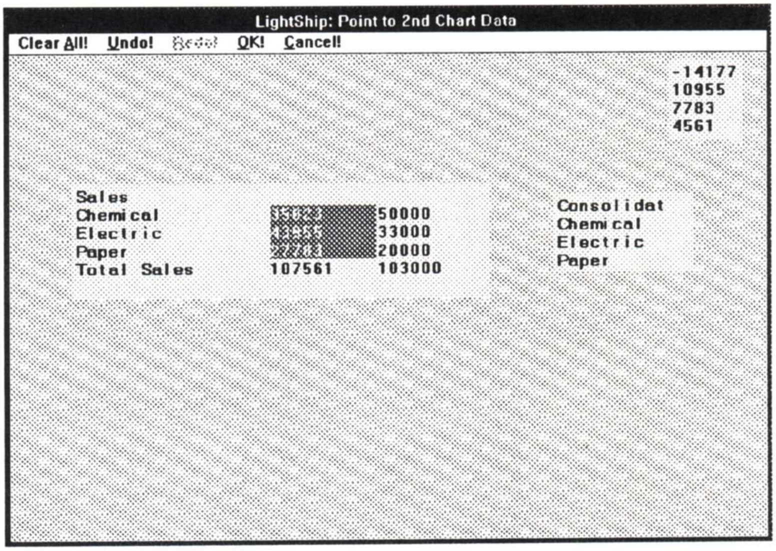
Selecting the Second Data

Now, select the actual numbers for the second data series.

1. Choose Chart Data New Series.

   Note that the menu now shows "1st" for the first data series and "New Series", so that you can select a new series.

2. Select the first three numbers in the actual column.

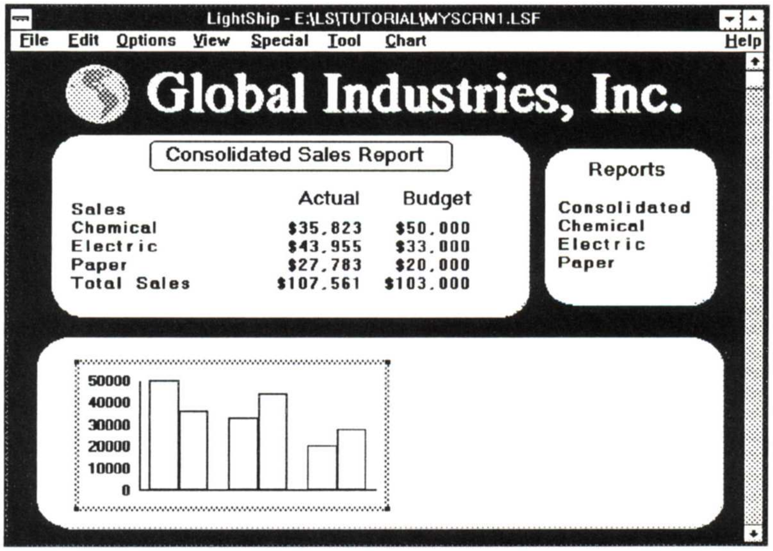


```
                                                        -14177
                                                        10955
                                                        7783
                                                        4561

Sales
Chemical          35823     50000            Consolidat
Electric          43955     33000            Chemical
Paper             27783     20000            Electric
Total Sales       107561    103000           Paper
```

Figure 6-4 Selecting the Second Data Series

3. Choose OK!



Global Industries, Inc.

Consolidated Sales Report

Sales	Actual	Budget
Chemical	$35,823	$50,000
Electric	$43,955	$33,000
Paper	$27,783	$20,000
Total Sales	$107,561	$103,000

Reports

Consolidated
Chemical
Electric
Paper

Figure 6-5 The Second Data Series is Charted

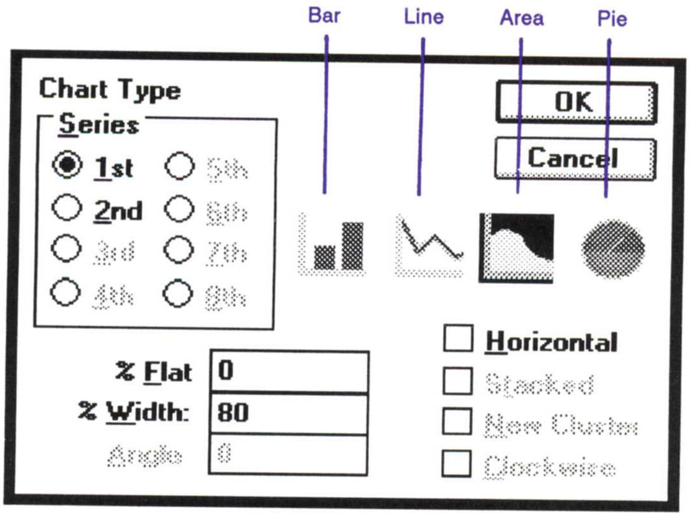
Changing the Chart Type

Bar charts are the default chart type. In this section, you'll change the first data series so that it will show to a better advantage.

☐ **To change a chart type:**

1. Choose Chart Type.

   The dialog box shown in Figure 6-6 appears.



Series
● 1st ○ 5th
○ 2nd ○ 6th
○ 3rd ○ 7th
○ 4th ○ 8th

% Flat 0
% Width: 80
Angle 0

☐ Horizontal
☐ Stacked
☐ New Cluster
☐ Clockwise

Figure 6-6 Changing a Chart Type

2. Leaving the 1st button selected, select the area chart icon.
3. In the % Width text box, type:

   80

4. Choose the 2nd button.
5. Leave the bar chart icon selected.
6. In the % Width text box, type:

   40

7. Choose OK.

Changing the Chart Colors

In this section you will color the various chart items. Even though not all the items are defined yet, you will specify the colors for all the items while the color dialog box is open.

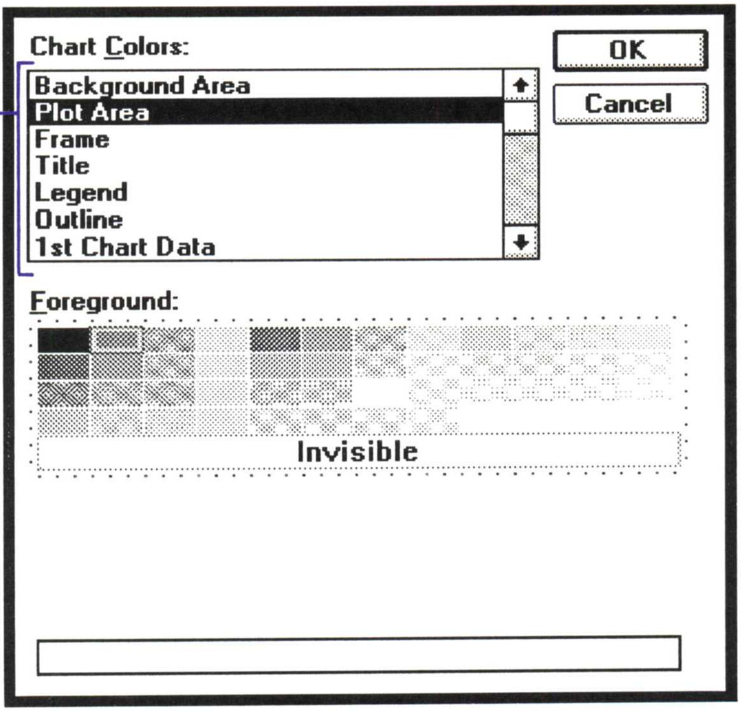
☞ **Note** If you are in a hurry, you can skip this and go on to the next section.

☐ **To change the color of chart items:**

1. Choose Chart Color or press F5.

   The dialog box shown in Figure 6-7 appears.

2. Select Plot Area and then select dark blue-purple.

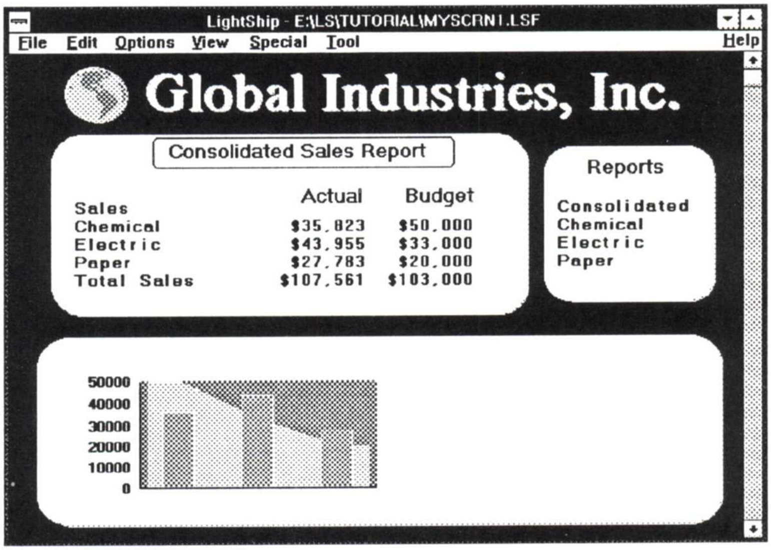


Select the Item to Color Here

Figure 6-7 Coloring Chart Items

3. Select Legend and then select dark red-purple (underneath the dark blue-purple) in the Foreground box.
4. Select Outline and then select white.
5. Select 1st Chart Data and then select bright blue.
6. Select 2nd Chart Data and then select gray-green.
7. Select Numeric Label and then select dark blue-purple.
8. Select Numeric Axis and then select white.
9. Select Numeric Crosses Line and then select white.
10. Select Category Axis and then select white.
11. Choose OK to enter your selections and close the dialog box.

    Your screen should resemble Figure 6-8.



Global Industries, Inc.

Consolidated Sales Report

	Actual	Budget
Sales		
Chemical	$35,823	$50,000
Electric	$43,955	$33,000
Paper	$27,783	$20,000
Total Sales	$107,561	$103,000

Reports

Consolidated
Chemical
Electric
Paper

Figure 6-8 The First Chart

Displaying a Legend

The chart legend identifies the data being charted. For example, this chart shows budget and actual data. Because you will need to select the legend from a document object in Point mode, you'll copy the text file document object. This has the text that you need for the legend. You will scroll up to that line and then hide the document object. You do not forfeit performance because the document object is loaded with data only one time.

Copying the Document Object

☐ **To copy the document object:**

1. Select the document object with the actual and budget figures and press the INS key.

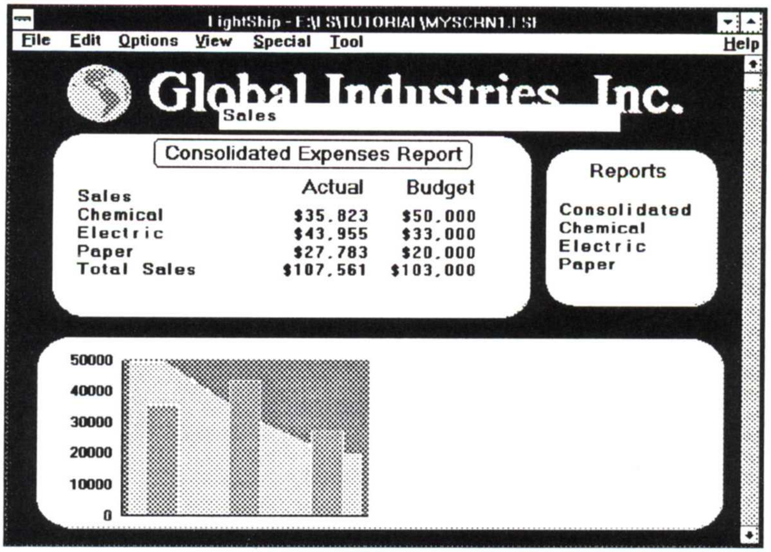
   This document has the same attributes as the original so you must change them.

2. Press F5 and double-click on white as the background color.

3. Resize the new document object so that only the "Sales" line shows.

4. Drag it as shown in Figure 6-9.

5. Choose Document Top-left Corner to turn it off.

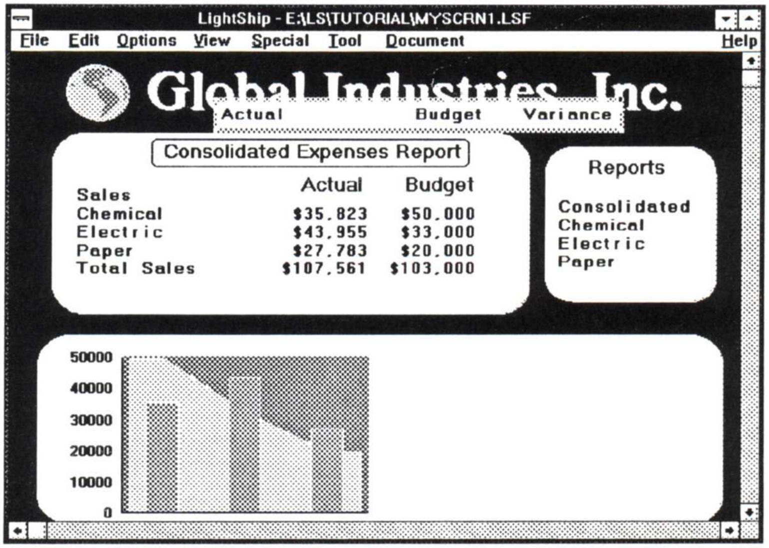


Consolidated Expenses Report

Sales	Actual	Budget
Chemical	$35,823	$50,000
Electric	$43,955	$33,000
Paper	$27,783	$20,000
Total Sales	$107,561	$103,000

Figure 6-9 Copying the Document Object

6. Scroll up three lines until the object displays "Actual Budget Variance," as shown in Figure 6-10.



Consolidated Expenses Report

Sales	Actual	Budget
Chemical	$35,823	$50,000
Electric	$43,955	$33,000
Paper	$27,783	$20,000
Total Sales	$107,561	$103,000

Figure 6-10 Preparing the Legends

7. Choose Document Vertical Scroll to turn off vertical scrolling.

8. Choose Document Hidden to hide the document object.

Selecting the Legend

❑ To select the legend:

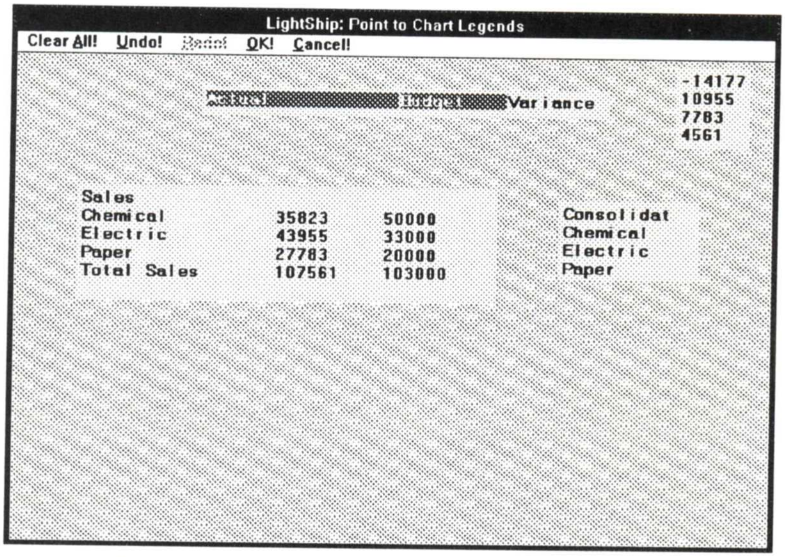
1. Select the chart.

2. Choose Chart Legends.

   The Point mode screen appears.

3. Select "Budget," as shown in Figure 6-11.

4. Then select "Actual," as shown in Figure 6-11.

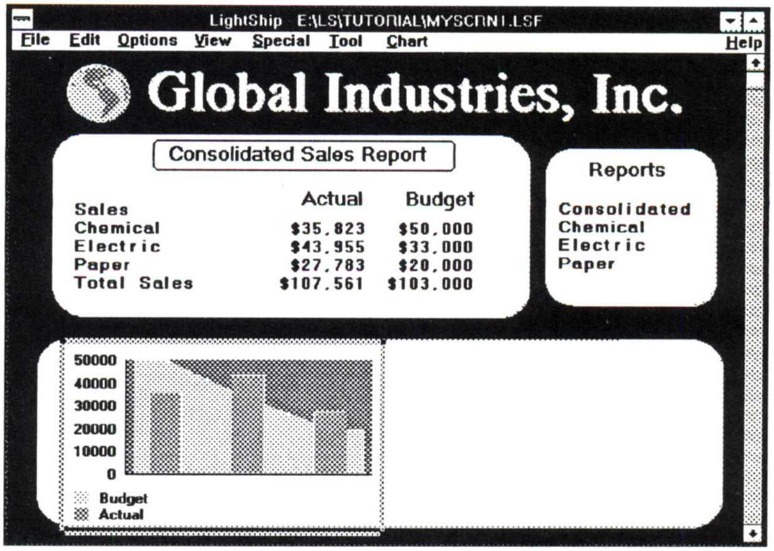


```
                                                          -14177
                                                          10955
                                                          7783
                                                          4561

Sales
Chemical          35823     50000              Consolidat
Electric          43955     33000              Chemical
Paper             27783     20000              Electric
Total Sales       107561    103000             Paper
```

Figure 6-11 Selecting the Legend in Point Mode

5. Choose OK!



Global Industries, Inc.

Consolidated Sales Report

Sales	Actual	Budget
Chemical	$35,823	$50,000
Electric	$43,955	$33,000
Paper	$27,783	$20,000
Total Sales	$107,561	$103,000

Figure 6-12 The Legend Appears on the Chart

6. Resize the chart so that it is almost as large as the image object frame, while staying on the left side.

7. Reposition the chart as needed.

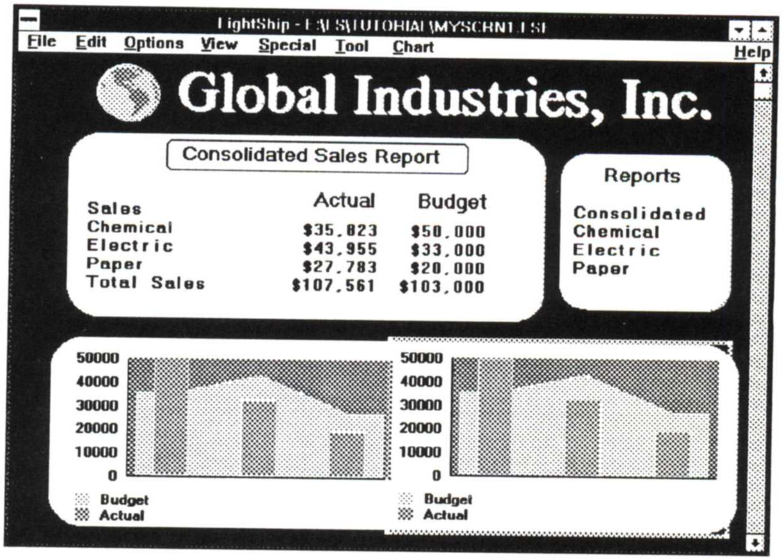
Creating the Second Chart

The second chart will graph the variance numbers. You can create the second chart by copying the first one.

☐ **To create the second chart:**

1. Select the chart and press INS.

2. Drag the copy of the chart over to the right, as shown in Figure 6-13.



Sales	Actual	Budget
Chemical	$35,823	$50,000
Electric	$43,955	$33,000
Paper	$27,783	$20,000
Total Sales	$107,561	$103,000

Figure 6-13 Creating the Second Chart

3. Choose Chart Data 2nd.

   The Point mode screen appears.

4. Choose Undo!

   The selected area clears.

5. Choose OK!

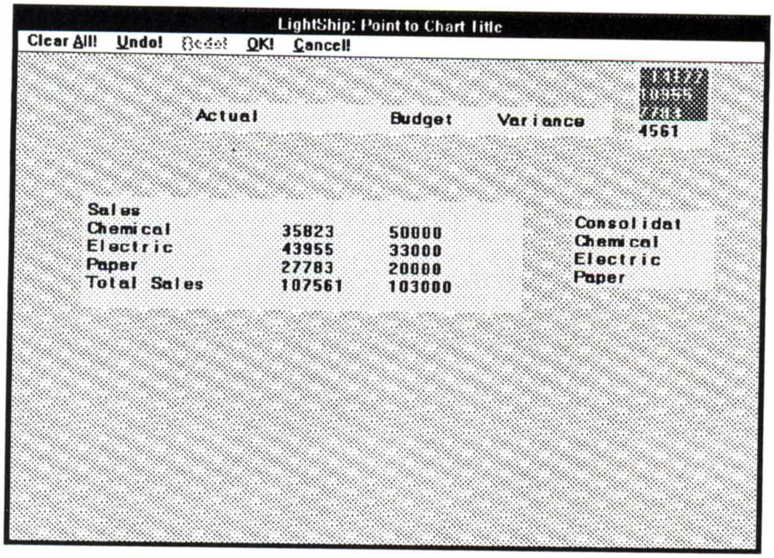
6. Choose Chart Data 1st.

   The Point mode screen appears.

7. Choose Undo!

   The selected area clears.

8. Select the first three variance numbers, as shown in Figure 6-14.



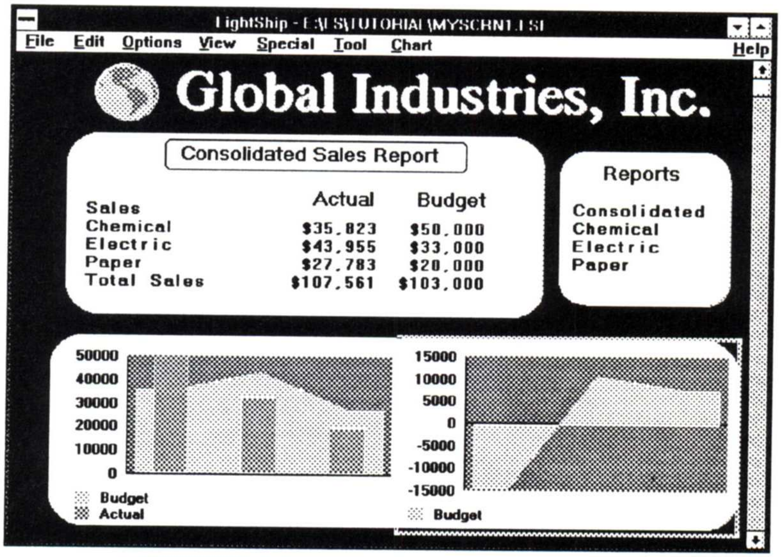
	Actual	Budget	Variance
Sales			
Chemical	35823	50000	
Electric	43955	33000	
Paper	27783	20000	
Total Sales	107561	103000	4561

Consolidat
Chemical
Electric
Paper

Figure 6-14 Selecting the Variance Numbers

9. Choose OK!

   Your screen should resemble Figure 6-15.



Consolidated Sales Report

Sales	Actual	Budget
Chemical	$35,823	$50,000
Electric	$43,955	$33,000
Paper	$27,783	$20,000
Total Sales	$107,561	$103,000

Reports

Consolidated
Chemical
Electric
Paper

Figure 6-15 The Second Chart

Changing the Chart Type

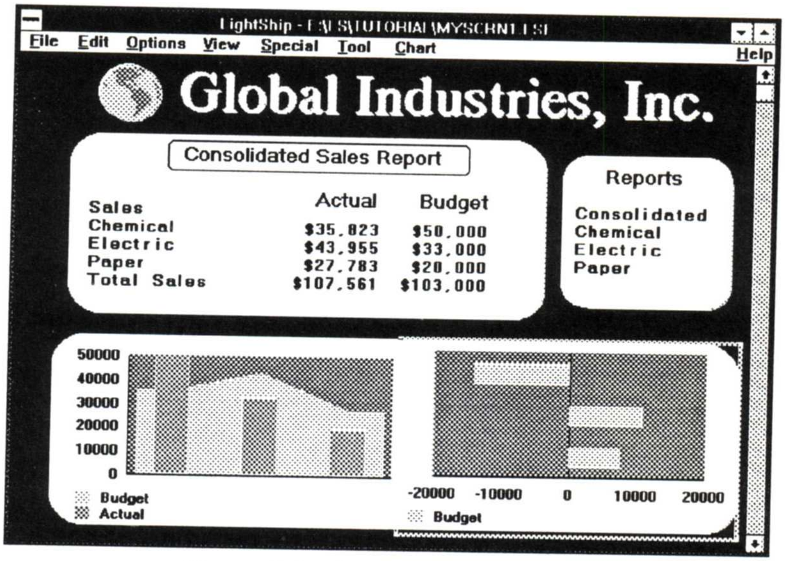
Now you'll make this chart a horizontal bar chart.

❑ **To change the chart type:**

1. Choose Chart Type.
2. Select the bar chart icon.
3. Click in the % Width box and type:

   `50`

4. Turn on the Horizontal check box.
5. Choose OK.



Consolidated Sales Report

Sales	Actual	Budget
Chemical	$35,823	$50,000
Electric	$43,955	$33,000
Paper	$27,783	$20,000
Total Sales	$107,561	$103,000

Figure 6-16 A Horizontal Bar Chart

Displaying a Legend

In this section, you will select the legend.

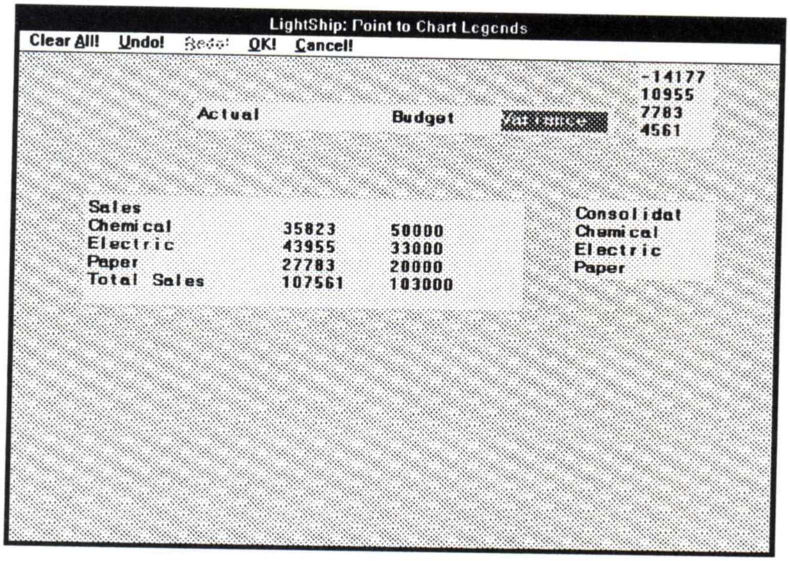
☐ **To select the legend:**

1. Choose Chart Legends.

   The Point mode screen appears.

2. Choose Clear All!

3. Select "Variance," as shown in Figure 6-17.

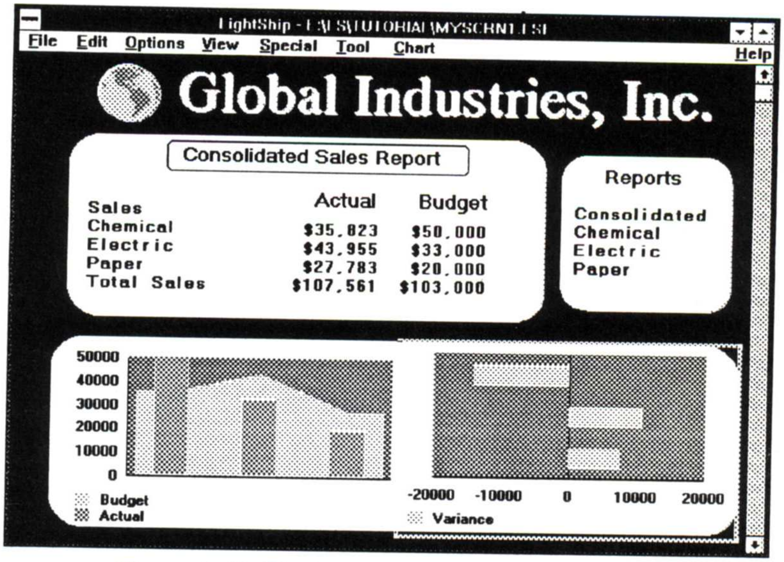


```
                                                        -14177
                                                        10955
          Actual             Budget      Variance       7783
                                                        4561

   Sales                                             Consolidat
   Chemical        35823     50000                   Chemical
   Electric        43955     33000                   Electric
   Paper           27783     20000                   Paper
   Total Sales     107561    103000
```

Figure 6-17 Selecting the Legend

4. Choose OK!



Consolidated Sales Report

Sales	Actual	Budget
Chemical	$35,823	$50,000
Electric	$43,955	$33,000
Paper	$27,783	$20,000
Total Sales	$107,561	$103,000

Figure 6-18 The Legend Appears on the Chart

Changing Colors

Now you'll change the color of the data.

☐ **To change a color:**

1. Press F5.

   The Chart Color dialog box appears.

2. Choose 1st Chart Data and then double-click on bright pink.

Testing the Charts

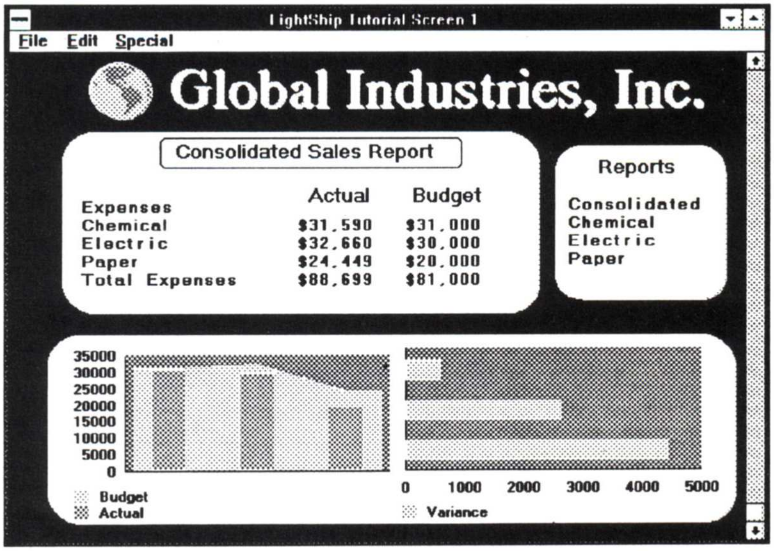
Now go to the Browse level and see if the charts change when you scroll the document object.

☐ **To test the charts:**

1. Choose Special Author or press F4.

2. Press PAGEDOWN or PGDN.

   The document object with the actual and budget figures should scroll down, the variances should recalculate for the second page of the document object, and the charts should change.



Expenses	Actual	Budget
Chemical	$31,590	$31,000
Electric	$32,660	$30,000
Paper	$24,449	$20,000
Total Expenses	$88,699	$81,000

Figure 6-19 The Consolidated Expenses Report

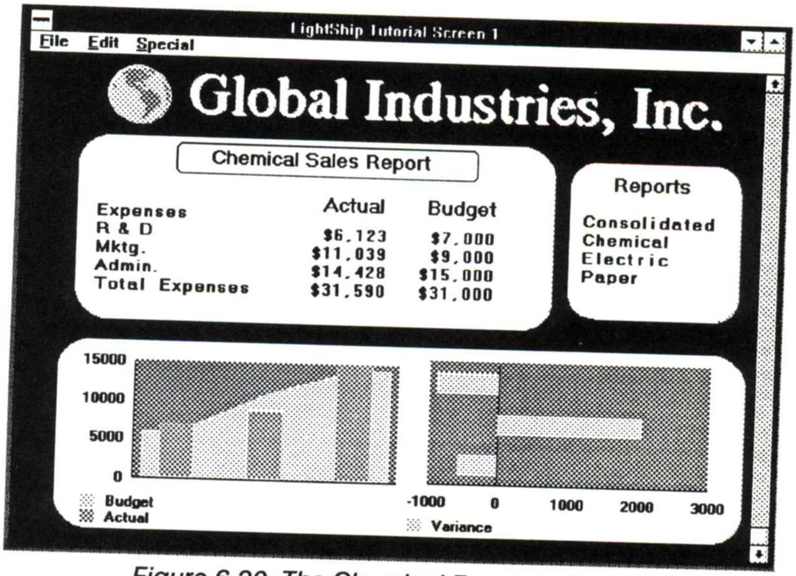
3. Press PAGEUP or PGUP.

   The document object should scroll up, the variances should recalculate for the first page of the document object, and the charts should change.

4. Select "Chemical."

5. Press PAGEDOWN or PGDN.

   The document object should scroll down, the variances should recalculate for the second page of the document object, and the charts should change.



Chemical Sales Report

Expenses	Actual	Budget
R & D	$6,123	$7,000
Mktg.	$11,039	$9,000
Admin.	$14,428	$15,000
Total Expenses	$31,590	$31,000

Reports

- Consolidated
- Chemical
- Electric
- Paper

Figure 6-20 The Chemical Expenses Report

If the screen does not update as shown, refer to "Ordering the Objects" in Exercise 3, and "Testing the Hotspot" in Exercise 5.

6. Make sure Consolidated is selected.
7. Choose Special Author or press F4.
8. Choose File Save or press F9 to save the file.

   This saves the screen with *report* and *datafile* initialized to the consolidated values.

This is end of Exercise 6. Proceed to the next exercise to see how to go to another screen.

* * *

Exercise 7: Going to Another Screen

You will set up this application so that when you click on the text file document object, you will open another screen that displays a chart for the current division. This screen, SCREEN2.LSF, is provided. The chart on this screen displays five years worth of sales and expense totals.

In this exercise, you will create a hotspot on the text file document object. The hotspot will open the second screen and pass parameters to it that contain information about the current division or consolidated report.

The files for the second screen have the same names as the files for the first screen, except they have an "a" on the end. The files are called:

- CONSOL3A
- CHEM3A
- ELECT3A
- PAPER3A

The source for the document object on SCREEN2.LSF is referenced in the Document Text File dialog box as *@(datafile)a.txt*.

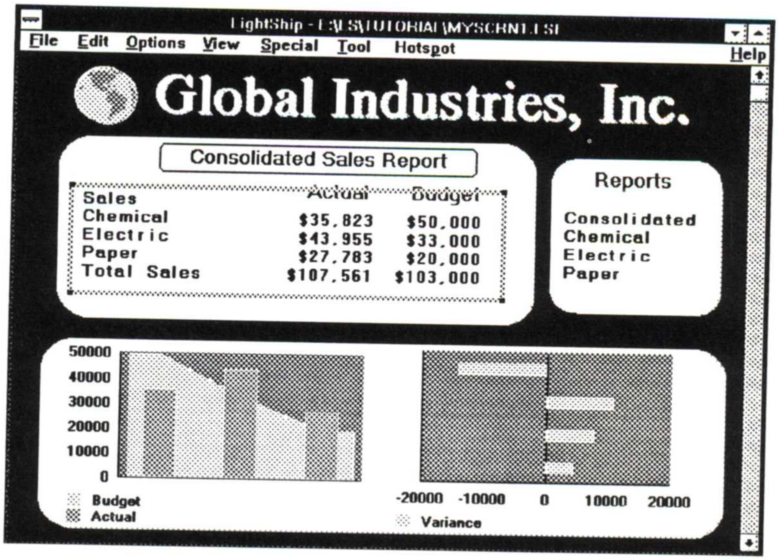
Creating a Hotspot

You can open the second screen and pass parameters by creating a hotspot. This hotspot will be in front of the text file document object.

☐ **To create the hotspot:**

1. Choose Tool Hotspot.

   Drag the mouse across the document object, as shown in Figure 7-1.



Sales	Actual	Budget
Chemical	$35,823	$50,000
Electric	$43,955	$33,000
Paper	$27,783	$20,000
Total Sales	$107,561	$103,000

Figure 7-1 Creating a Hotspot

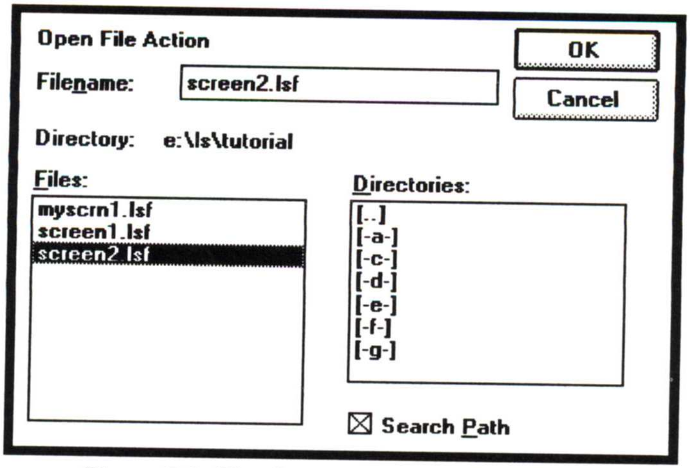
2. Choose Hotspot Actions.

   The Hotspot Action dialog box appears.

3. Select *Open File - Add to Retrace Path* in the Action Description list box.

4. Choose Insert.

   The dialog box shown in Figure 7-2 appears.



Open File Action

Filename: screen2.lsf

Directory: e:\ls\tutorial

Files:
- myscrn1.lsf
- screen1.lsf
- screen2.lsf

Directories:
- [..]
- [-a-]
- [-c-]
- [-d-]
- [-e-]
- [-f-]
- [-g-]

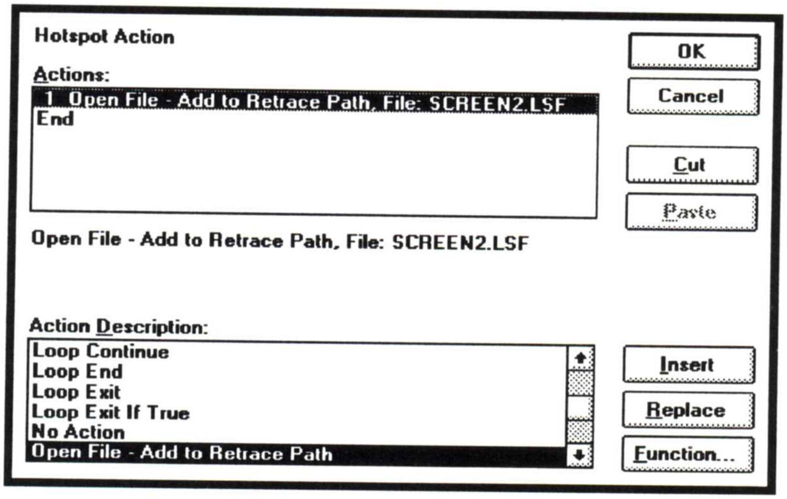
☒ Search Path

Figure 7-2 The Open File Action Dialog Box

5. Select SCREEN2.LSF from the Files list box.

6. Choose OK.

   The dialog box should look like Figure 7-3.



Hotspot Action

Actions:
- 1 Open File - Add to Retrace Path, File: SCREEN2.LSF
- End

Open File - Add to Retrace Path, File: SCREEN2.LSF

Action Description:
- Loop Continue
- Loop End
- Loop Exit
- Loop Exit If True
- No Action
- Open File - Add to Retrace Path

Figure 7-3 The Hotspot Action Dialog Box

7. Choose OK.

Defining Hotspot Parameters

Now you'll define the parameters that will be passed to SCREEN2.LSF. You will pass the name of the current text file in *datafile* and the name of the current report title in *report*.

☐ **To define the hotspot parameters:**

1. Choose Hotspot Parameters.

   The dialog box shown in Figure 7-4 appears.

2. In the Name text box, type:

   `report`

   or, select *report* from the drop-down variables list box.

3. Press TAB to move to the Value text box and type:

   `@(report)`

4. Press SHIFT+TAB to move back to the Name text box, and type:

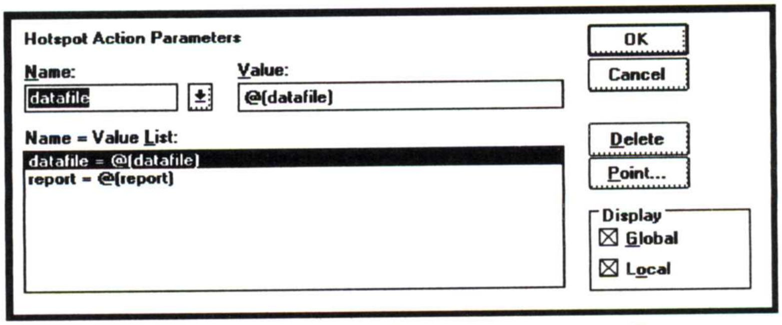
   `datafile`

   or, select *datafile* from the drop-down variables list box.

5. Press TAB to move to the Value text box and type:

   `@(datafile)`

   The dialog box should look like Figure 7-4.



Hotspot Action Parameters

Name: datafile

Value: @(datafile)

Name = Value List:

datafile = @(datafile)
report = @(report)

Display

☒ Global

☒ Local

Figure 7-4 The Hotspot Parameters Dialog Box

6. Choose OK.

Going to Another Screen

☐ **To go to the second screen:**

1. Press F4.
2. Then click on the hotspot on the text file document object.

   You will be prompted to save any changes you have made to the screen.
3. Choose Yes.

   SCREEN2.LSF opens. You may want to turn on View Outline All Objects and View Display Hidden Objects to explore the objects on the screen.

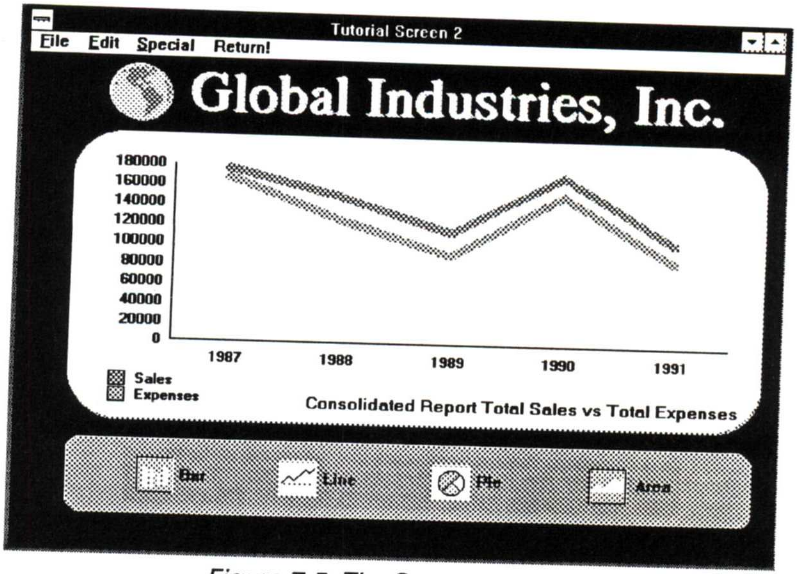


Figure 7-5 The Second Screen

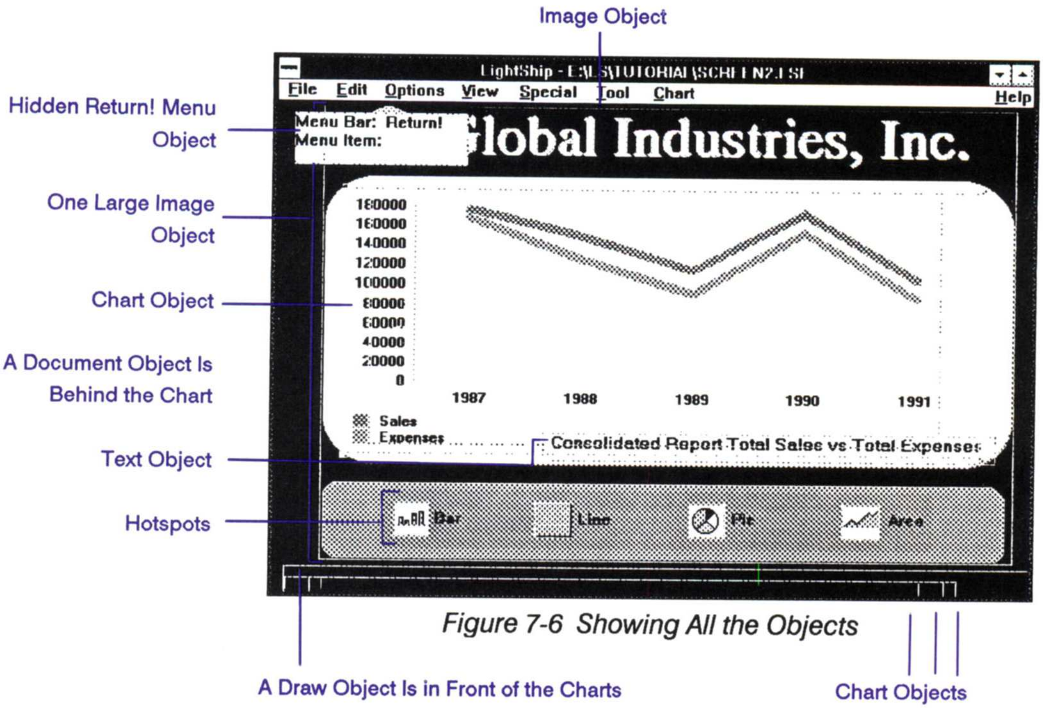
This screen displays a chart of the current division's total sales and expenses from 1987 to 1991.

Choose a chart icon to display the same data with a different chart type.

Exploring the Screen

☐ **To explore this screen:**

1. Press F4 to go to the Author level.
2. Choose View Outline All Objects.
3. Choose View Show Hidden Object.



Menu Bar: Return!
Menu Item:

Figure 7-6 Showing All the Objects

4. Select each object you want to know about and look at its attributes.

The chart graphs two data series. The data is selected from a document object behind the visible chart and the large image object. The document object source is driven by the variable *datafile* that you passed into this screen. The chart object uses text from the document object for the category labels and the legend.

Although the title seems to be part of the chart, it is a text object that references the variable *report*. The chart title changes whenever you open the screen with a different report.

Each chart icon on the bottom of the screen has a hotspot in front of it. When you choose a hotspot, it assigns a number that represents the chart type that you selected. Then it checks to see if the chart type you selected is already displayed. If the chart is displayed, the hotspot does not execute any further actions.

If the chart type is not displayed, the POSITION function moves the visible chart to a predetermined position at the bottom of the screen, behind a large draw object. It then moves the newly selected chart from its position on the lower screen to the center of the screen where you see it displayed.

Note that you can display the size and position of the selected object by choosing View Status. For more information on the POSITION function, refer to the *LightShip Reference Guide*.

The hotspots use the Highlight Group 1 command to group them together like option buttons. When you choose a hotspot in the group, it becomes highlighted to show that it is actively selected and the previously selected hotspot becomes unhighlighted.

Take care not to move any of the charts out of position or the POSITION function will not work. If you do move an object, you should choose File Open again to redisplay the screen. At the "Save Modifications..." prompt, choose No.

The Return! menu bar command returns you to the previous screen. Its action opens the previous screen and clears the retrace path. It also passes back parameters for the current report name and the report filename so that when the previous screen opens, it still displays the current report.

Editing the Return Menu Object

You need to edit the menu object that controls the return to the first screen so that it uses the correct filename.

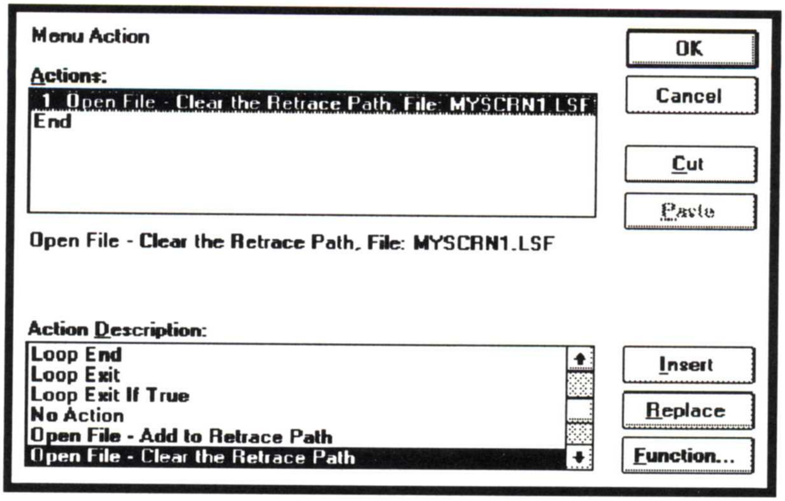
☐ **To edit the menu object:**

1. Press F4 to go to the Author level.

2. Select the Return! menu object.

3. Choose Menu Actions.

   Open File - Clear the Path is already selected in the Actions list box.



1 Open File - Clear the Retrace Path, File: MYSCRN1.LSF
End

Open File - Clear the Retrace Path, File: MYSCRN1.LSF

Loop End
Loop Exit
Loop Exit If True
No Action
Open File - Add to Retrace Path
Open File - Clear the Retrace Path

Figure 7-7 Editing the Menu Action

4. Choose Replace.

   The Open File Action dialog box appears.

5. Make sure the Search Path check box is turned on.

6. Select the filename of the screen you created.

7. Choose OK.

8. Choose OK.

Returning to the First Screen

☐ **To return to the first screen:**

1. Press F4.
2. Choose Return!

   You will prompted to save modifications to the file.
3. Choose Yes.

This concludes the LightShip tutorial.

* * *

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